

THE ATHENÆUM

Journal of English and Foreign Literature, Science, and the Fine Arts.

No. 1298.

LONDON, SATURDAY, SEPTEMBER 11, 1852.

For the convenience of Subscribers residing in remote places, the weekly numbers are reissued in Monthly Parts, stitched in a wrapper, and forwarded with the Magazine.—Subscriptions for the Stamped Edition for the Continent, for not less than Three Months, and in advance, are received by M. BAUDRY, 3, Quai Malaquais, Paris, or at the Publishing Office, 14, Wellington-street North, Strand, London. For France and other Countries not requiring the postage to be paid in London, 36, or 11, 2s. the year. To other Countries, the postage in addition.

KING'S COLLEGE, LONDON.—MEDICAL DEPARTMENT.—The WINTER SESSION, 1852-53, will COMMENCE on FRIDAY, October 1, 1852, on which day all Students are expected to attend the Introductory Lecture, by R. B. Todd, Esq., M.D., Professor of Physiology, at 3 o'clock.

The following Courses of LECTURES will be given during the Session:—
Anatomy, Descriptive and Surgical—Professor Richard Partridge, F.R.S.; Demonstrators, Henry Lee, F.R.C.S., Henry Hyde Salter, M.B., and John Wood.
Physiology and General Morbid Anatomy—Professors R. B. Todd, M.D. F.R.S., and W. Bowman, F.R.S.
Chemistry, Theoretical and Practical—Professors W. A. Miller, M.D. F.R.S., and John Bowman, Esq.; Demonstrator, T. F. Harwich.
Principles and Practice of Medicine—Professor George Budd, M.D. F.R.S.
Principles and Practice of Surgery—Prof. William Fergusson, F.R.S.

KING'S COLLEGE HOSPITAL.
The Hospital is visited daily.
Clinical Lectures are given every week, both by the Physicians and by the Surgeons.
The Physicians' Assistants and Clinical Clerks, the House Surgeons and Dispensaries are selected by examinations from the Students of the Hospital.
Scholarships.—New Students entering for this Session will have the privilege of contending for the two Warneford Scholarships of 25l. per annum, for three years. The Examination commences on the 30th of September next, on the following subjects:—Divinity, the Elements of Medicine, History, and Modern Languages—an equal number of marks being assigned to each subject.
One Scholarship of 40l. tenable for three years; one of 30l., and three of 20l. each, tenable for two years, will be filled up in April next, the subjects of the examination being exclusively medical.
Full particulars upon every subject may be obtained from Professor Todd, M.D., Dean of the Department; or upon application to J. W. Cunningham, Esq., Secretary.
July 22, 1852. R. W. JELF, D.D., Principal.

UNIVERSITY COLLEGE, LONDON.—FACULTY OF ARTS AND LAWS.—Session 1852-53.—The SESSION will COMMENCE on THURSDAY, October 14, when the Dean, M.D., will deliver an INTRODUCTORY LECTURE at Three o'clock precisely.

CLASSES.
Latin—Professor Newman.
Greek—Professor Malden, A.M.
Hebrew—Professor Goldstick.
Sanskrit—Professor Goldstick.
Sanskrit Language and Literature (vacant).
French Language and Literature—Professor Merlet.
Italian Language and Literature—Professor Gallenga.
German Language and Literature—Professor Heilmann, Ph.D.
Comparative Grammar—Professor Key, A.M.
Mathematics—Professor De Morgan.
Natural Philosophy and Astronomy—Professor Potter, A.M.
Chemistry—Professor Graham.
Practical and Analytical Chemistry (commencing 1st October)—Professor A. W. Williamson, Ph.D.
Civil Engineering—Professor Hermann Lewis, A.M.
Architecture—Professor Donaldson, M.I.R.A.
Mechanical Principles of Engineering—Professor Eaton Hodgkinson.
Machinery (vacant).
Drawing Teacher—Mr. Moore.
Surveying (vacant).
Botany—Professor Chapman.
Zoology—Professor Lindley, Ph.D.
Zoology Recent and Fossil—Professor Grant, M.D.
Philosophy of Mind and Logic—Professor the Rev. J. Hoppus, Ph.D.
Ancient and Modern History—Professor Creasy, A.M.
Law—Professor Russell, LL.B.
Jurisprudence—Professor Potter, M.A. LL.D.
Scholarships—Classes—Professors Newman, Malden, De Morgan, and Potter.

RESIDENCE OF STUDENTS.—Several of the Professors receive Students to reside with them, and in the Office of the College there is kept a register of parties who receive boarders into their families. The register will afford information as to terms and other particulars.

Four Andrews Scholarships, one of 70l., one of 50l., and two of 40l. each, will be awarded in October next to the four best students in Latin, Greek, Mathematics, and Natural Philosophy. Candidates must have been during the academical year immediately preceding the date of the examination, or Pupils in the School in October 1852 and subsequent years the Scholarships will be one of 70l. and two of 40l.

WILLIAMSON PRIZE FOR PRACTICAL CHEMISTRY.—A Prize of 20l. awarded by Alexander Williamson, Esq., for the most successful experimental research undertaken in the Birkbeck Laboratory during the Session of 1852-53, and may be competed for by all Students who attend the Annual Course of Instruction in the Laboratory. It will be awarded in August, 1853, at the end of the Session. Mr. Williamson has desired that it may be announced that he will probably offer similar prizes for the two following years.

Prospectuses and further particulars may be obtained at the Office of the College.

JOHN HOPPUS, Ph.D., Dean of the Faculty.
CHAS. C. ATKINSON, Secretary to the Council.

The Session of the Faculty of Medicine will commence on the 1st of October.

The Junior School will open on the 21st of September.

UNIVERSITY HALL, GORDON SQUARE, LONDON.—This Institution will RE-OPEN in OCTOBER NEXT, under the superintendence of the Principal Dr. WILLIAM B. CARPENTER, F.R.S., &c., for the residence of Students at University College during the Academical Session.

Information respecting the arrangements of the Hall, Terms of Residence, &c., may be obtained by application to the Principal, or to the Honorary Secretary, at the Hall.

August 23, 1852. D. DAVISON, Hon. Sec.

UNIVERSITY COLLEGE, LONDON.—JUNIOR SCHOOL, under the Government of the Council of the College.

Head Master—THOMAS HEWITT KEY, A.M.
The SCHOOL will OPEN on TUESDAY, the 21st of SEPTEMBER. The Session is divided into three terms—viz. From the 21st of September to Christmas, from Christmas to Easter, and from Easter to August.

The yearly payment for each pupil is 18l., of which 6l. are paid in advance in each term.

The hours of attendance are from a quarter past 9 to three-quarters past 3 o'clock.

The afternoons of Wednesday and Saturday are devoted exclusively to Drawing.

The subjects taught are—Reading, Writing, the English, Latin, Greek, French, and German Languages, and English History, Geography (both Physical and Political), Arithmetic and Bookkeeping, the Elements of Mathematics, and of Natural Philosophy, of Chemistry, and Drawing.

Any pupil may omit Greek, or Greek and Latin, and devote his whole attention to the other branches of education.

There is a general examination of pupils at the end of the Session and the prizes are then given.

The discipline of the School is maintained without corporal punishment.

A monthly report of the conduct of each pupil is sent to his parent or guardian.

Further particulars may be obtained at the Office of the College.

CHAS. C. ATKINSON, Secretary to the Council.

The College Lectures in the Classes of the Faculty of Medicine will commence on the 1st of October, those of the Faculty of Arts on the 14th of October.

August, 1852.

NEW COLLEGE, LONDON.—FACULTY OF ARTS.

The SESSION of 1852-53 will COMMENCE on THURSDAY, September 20, at 12 o'clock.

The Classes are open to Lay Students without distinction of religious denomination.

CLASSES.

Religious Instruction—The Rev. John Harris, D.D., Principal.

Greek and Latin—Professor William Smith, LL.D.

Mathematics and Natural Philosophy—Professor the Rev. Philip Smith, B.A.

Mental and Moral Philosophy, Logic, and Rhetoric—Professor the Rev. J. H. Godwin.

The Natural History Sciences—Professor Edwin Lankester, M.D.

German—Professor the Rev. Maurice Jenner.

The Lectures are delivered between the hours of 10 and 3. The Library is open for the use of the Students from 11 a.m. till 3 p.m.

The College is empowered by Royal Warrant to grant the necessary Certificates to Candidates for Degrees in Arts and Laws in the University of London.

Information respecting the Residence of Students, and all other necessary particulars, may be obtained from the Secretary upon application, personally or by letter, at the College, in the Finsbury-road, St. John's Wood.

Prospectuses may be obtained at the College, or of Messrs. Jackson & Walford, 15, St. Paul's-churchyard.

JOHN HARRIS, D.D., Principal.

WILLIAM FARRER, LL.B., Secretary.

Sept. 1, 1852.

QUEEN'S COLLEGE, LONDON.

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R. Rev. Michael Biggs, M.A.

I. Brassey, Esq.

The Rev. J. S. Brewer, M.A.

The Rev. R. W. Browne, M.A.

The Rev. S. Clark, M.A.

The Rev. H. Thos. Calk, M.A.

E. Cowper, Esq.

E. Forbes, Esq., F.R.S. F.L.S.

T. M. Goodere, Esq., M.A.

The Rev. T. G. Hall, M.A.

Michaelmas Term will commence October 4, 1852, and close December 15.

Lent Term will commence January 17, 1853, and close March 19.

Easter Term will commence April 7, 1853, and close June 29.

The Fees are—a composition of 25s. for the year, or 10s. for one term, for all the Lectures in any division; or 11, 11s. 6d. per term, for those Classes which meet twice in the week, and 1s. for those which meet once; all payments to be made at entrance.

Individual instruction in Vocal Music in its higher branches will be given by Mr. George Benson, under the direction of Mr. Hullah; and in Instrumental Music by Messrs R. Barnett, O. May, and W. Horrell, under the direction of Mr. Stencland Bennett. Instruction for advanced pupils in Drawing will be similarly arranged, under the direction of Mr. Mulready and Mr. Warren: the Fee for each, Three Guineas per term.

Arrangements have been made for teaching Animal and Flower Drawing, Modelling, and Ornamental Art, under the immediate superintendence of the Professors of Drawing; and for the prosecution of other studies not suitable to class teaching.

The Drawing Room is open to pupils for practice from 9 to 4 o'clock on Tuesdays, Wednesdays, Thursdays, and Fridays during term.

Lectures in Botany, Chemistry, Geology, and the Useful Arts will be delivered in Easter Term.

Particulars may be ascertained at the College, daily, from 10 till 4; from the Deputy-Chairman at the College every Wednesday and Saturday before 2 o'clock; or from Mr. C. W. Klugh, Secretary to the Parent Society, 25, Sackville-street.

The Committee of Education place yearly Four Free Presentations at the disposal of the Parent Society; and it is hoped that others may be founded by individuals.

PREPARATORY CLASSES are opened for pupils of not less than nine years of age. The hours are from 9 to 10 1/2.

The payment is 12l. 15s. per year—the year extending from the last week in September to the last week in July.

OWENS COLLEGE, MANCHESTER.

(In connection with the University of London.)—Session 1852-53.

The COLLEGE will OPEN for the SESSION 1852-53 on MONDAY, the 4th of October next, and the EXAMINATION previous to the admission of proposing Students will commence on that day, and be continued on following days, at Ten o'clock A.M. at the College. The Session will terminate in July, 1853.

Courses of Instruction will be given in the following Departments:—

Comparative Grammar and English Language and Literature—Prof. J. Scott, A.M., Principal.

Logic, and Mental and Moral Philosophy—Prof. A. J. Scott, A.M.

Language and Literature of Greece and Rome—Prof. J. O. Green-wood, B.A.

Mathematics and Physics—Prof. Archibald Sandeman, A.M.

History—Prof. J. G. Greenwood, B.A.

Chemistry, and its Application to the Arts, &c.—Prof. Edward Frankland, Ph.D. F.R.S.

Chemistry, Analytical and Practical, with Manipulation in the Laboratory, which is fitted up with every requisite convenience for the prosecution of this department—Prof. Edward Frankland, Ph.D. F.R.S.

Natural History: The entire Course comprises two Sessions, the portions for the present Session including Zoology, and Human and Comparative Anatomy—Prof. W. C. Williamson, M.R.C.S.L.

French Language and Literature—M. Foderin.

German Language and Literature—Prof. F. C. Theobald.

Additional Lectures, on which the attendance of the Students is optional and without fees.

On the Hebrew of the Old Testament, by Prof. Scott.

On the Greek of the New Testament, by Prof. Greenwood.

On the Relations of Religion to Ethics, by Prof. Scott.

Further particulars will be found in a Prospectus, which may be had from Mr. MATTHEWS, at the College, Quay-street, Manchester, where application may be made to the Principal on every Wednesday, from the 4th of October next, and on that day, and daily afterwards, between the hours of Ten and One.

BARLOW & ASTON, Solicitors to the Trustees, Town Hall-buildings, Manchester.

September 23, 1852.

QUEEN'S COLLEGE, BELFAST.

SESSION 1852-53.

FACULTY OF MEDICINE.

The SESSION will COMMENCE on TUESDAY, OCTOBER 19, 1852. The MATRICULATION EXAMINATION will begin on FRIDAY, OCTOBER 22.

SIX SCHOLARSHIPS, of the value of 50l. each, will be awarded, by examination, at the commencement of the Session. Scholars are exempted from the payment of one-half of the Class Fees in their department.

TWO SENIOR SCHOLARSHIPS, of the value of 50l. each, will be awarded, by examination, at the commencement of the Session, to Students who shall have completed the course of study of the first, second, and third years, prescribed to Candidates for the degree of M.D.

For the times and subjects of the several Examinations, the Courses of Study, and other particulars, including full information as to the method of proceeding to the degree of M.D. in the Queen's University in Ireland, see *The Belfast Queen's College Calendar* for 1852.

(By Order of the President) W. J. C. ALLEN, Registrar.

Queen's College, Belfast, June, 1852.

QUEEN'S COLLEGE, BELFAST.

SESSION 1852-53.

FACULTY OF LAW.

The SESSION will COMMENCE on TUESDAY, OCTOBER 19, 1852. The MATRICULATION EXAMINATION will begin on FRIDAY, OCTOBER 22.

THREE SCHOLARSHIPS, of the value of 50l. each, will be awarded by examination, which will begin on Monday, December 1st, 1852. Scholars are exempted from payment of one-half of the Class Fees in their department. Lectures will commence on Monday, November 22.

A SENIOR SCHOLARSHIP, of the value of 50l., will be awarded by examination, at the end of the courses of Lectures for the fourth year in Law, to the most distinguished Student who shall have proceeded to the degree of B.A., and shall have completed the course of legal study prescribed to Candidates for the degree of LL.B.

For the subjects of the several Examinations, the Courses of Study, and other particulars, including full information as to the method of proceeding to the diplomas of Elementary Law, and to the degrees of LL.B. and LL.D. in the Queen's University in Ireland, see *The Belfast Queen's College Calendar* for 1852.

(By Order of the President) W. J. C. ALLEN, Registrar.

Queen's College, Belfast, June, 1852.

GEOLOGY.—Persons wishing to become

acquainted with this interesting branch of Science will find their studies greatly facilitated by means of Elementary Collections, which can be had at Two, Five, Ten, Twenty, or Fifty Guineas each, arranged under the direction of T. TENNANT, (Mineralogist to Her Majesty), 149, Strand, London.

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METALLIC ORES:—Iron, Manganese, Lead, Tin, Zinc, Copper, Antimony, Silver, Gold, Platinum, &c.

ROCKS:—Granite, Gneiss, Mica-slate, Clay-slate, Porphyry, Serpentine, Sandstone, Limestone, Basalt, Lava, &c.

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On Thursday 18th, and Saturday 18th, of September.
On Friday 24th, and Saturday 25th, of September.
On Friday 1st, and Saturday 2nd, of October.
On Friday 8th, and Saturday 9th, of October.
On Friday 15th, and Saturday 16th, of October.
On Thursday 21st, and Saturday 22nd, of October.
On Friday 28th, and Saturday 29th, of October.
On Friday 5th, and Saturday 6th, of November.
On Friday 12th, and Saturday 13th, of November.
On Friday 19th, and Saturday 20th, of November.
On Thursday 25th, and Saturday 27th, of November.
On Friday 3rd, and Saturday 4th, of December.
On Friday 10th, and Saturday 11th, of December.
On Friday 17th, and Saturday 18th, of December.
On Thursday, 23rd of December.

MR. L. A. LEWIS will also have occasional SALES OF PRINTED MATERIALS, BOOKBINDING MATERIALS, HOUSEHOLD FURNITURE AND GENERAL EFFECTS.

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MR. J. C. STEVENS will SELL BY AUCTION, at his Great Room, 38, King-street, Covent-garden, on FRIDAY, 17th of September, at 12 for 1 o'clock, A MISCELLANEOUS COLLECTION, consisting of Telescopes, Microscopes, Pair of 15-inch Globes, Phantasmagoria Lantern, Musical Boxes, Violin, Cabinet of Roman Coins, Antiquities, Jewellery, shells, Minerals, Birds in Cases, Books, Prints and Pictures, Glazed Cases and Miscellaneous Articles.
May be viewed the day prior and morning of Sale, and Catalogue had.

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THE EDINBURGH REVIEW, No. CXCVI.

—ADVERTISEMENTS and BILLS intended for insertion are requested to be forwarded to the Publishers before WEDNESDAY, the 20th inst.

London: Longman, Brown & Co. 38, Paternoster-row.

ASSURANCE MAGAZINE and JOURNAL of the INSTITUTE of ACTUARIES.—ADVERTISEMENTS intended for insertion in No. IX. should be forwarded to C. & E. LAYTON, Printers and Publishers, 150, Fleet-street, London, on or before the 25th inst.

DUNN & DUNCAN'S LAW and **COMMERCIAL DAILY REMEMBRANCE** for 1853.—ADVERTISEMENTS from the LISTS ASSURANCE COMPANIES should be forwarded to C. & E. LAYTON, Printers and Publishers, 150, Fleet-street, London, on or before the 25th inst.

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REVIEWS

The Three Colonies of Australia: New South Wales, Victoria, and South Australia; their Pastures, Copper Mines, and Gold Fields. By S. Sidney. Ingram & Co.

Gleanings from the Gold Fields: a Guide for the Emigrant in Australia. By an Australian Journalist. Addey.

A Tramp to the Diggings; being Notes of a Ramble in Australia and New Zealand in 1852. By John Shaw, M.D. Bentley.

The literature of Australia grows apace. As the tide of emigration increases in depth and sweep with every returning wave, and the gold fascination grows like the heat of a summer morning—as the thousands depart daily for the land of hope, and the millions who are left behind in the old country grow more and more eager for information about the strange places at the other side of the world that have already become the homes of so many relatives and friends,—it is natural that there should be a large literary response to demands that have become urgent and imperious. It is in the usual order of things that this literary response should be somewhat miscellaneous. The subject invites it, and the audience courts it. If the whole motley of English life—the cabman and the lady's-maid—the unacted dramatist and the lawyer without a brief—the ruined spendthrift and the discontented waterman—can be turned at an hour's notice into miners and assayers of the precious metals, why may not any one, with or without due care, knowledge or experience, write books about them and their doings?

One man makes a tour of the world, and does not make a book about it,—another man does not make a tour of the world, and does make a book about it. These are samples of the genera into which the great order of travellers is usually divided; and with the latter of these we would class "the Australian Journalist," in spite of the silent protest of the title-page. But there are other genera:—for instance, men like Mr. Sidney, who both travel and write. Of this genus, Dr. Shaw is a curious variety. We confess that we took up his book with interest. 'A Tramp to the Diggings' is an attractive title. Then, the "Tramp" was advertised as having been made by a Travelling Physician, a Doctor of Medicine, a Fellow of the Geological and Linnean Societies. It had been made in the present year too:—so that, in fact, it was likely to contain the first clear and well-authenticated account yet received from the creeks and gorges in which the gold is found. The volume contains 317 pages; and in such a compass it would have been very possible to render clear to the reader, not only the geology and natural appearance of the country, but also its social and moral aspects. This, however, is not Dr. Shaw's method. We arrive at page 236 before we hear of the "diggings" at all,—and at page 262 we cease to hear any more about them. The rest of the book is the merest scissors-work. The author begins with copious extracts from Bonwick's 'Geography for Australian Youth,'—follows these up with a printed letter of Mr. Bland's,—then, cites long produce circulars of a Sydney firm of auctioneers,—never dropping an expletive or a comma that will occupy space. All these copious citations are flanked by other copious citations from the Australian journals:—one of them of not less than 48 pages. The space really devoted to the "diggings," extends over 11½ pages; and in this we cannot find a single fact or remark worth extracting. This volume deserves severe rebuke, because, ushered

into the world as it is, we can easily conceive that many a poor emigrant may spend his last seven shillings in a work that will yield him no real information.

Mr. Sidney's volume is of a different character. It exhibits in many places signs of haste in composition; but it is evidently the fruit of knowledge carefully collected and conscientiously used. Mr. Sidney's name is familiar to those who read the literature of colonization. He has himself seen the country which he describes; and in the compilation of his present volume he has had the use of his brother's diary of Bush Life and of the unpublished collections of Mrs. Chisholm. The result is, a book which, in spite of some drawbacks, is the best and most complete picture of Australia, past and present, that we know.

One of the oddest things in the whole history of discovery and territorial acquisition is, the circumstance that in both hemispheres the professed gold-seekers missed the object of their search,—while those found it who had not sought. For ages the Spaniard owned the valley of the Sacramento,—for three or four generations the Dutch alone had any precise knowledge of Australia. The Dutch had eyes, but saw not. Their commander, Carstens, sent out to explore the country, described it as consisting of "barren coasts, shallow waters, islands thinly peopled by cruel, poor, and brutal natives—of very little use." The natives had not found the gold that nature had thrown in their riverbeds and creeks, and the voyagers did not suspect its existence. The people were hostile and ugly. They wore no glittering chains, as the natives of Peru did. The aspect of the coast was wild, gloomy, barren. No tropical vegetation—no luscious fruits—invited the strangers to prolong their stay, or penetrate the thick bush in search of mineral treasure. The Hollanders did not want land,—they came in search of trade and gold,—and finding neither of these, they threw away a continent as large as Europe in disgust.

The English went to Australia for a home; and being there, they found out at last the full value of the estate so wantonly abandoned by others. Yet even we were long in finding this out; and there is scarcely a chapter in the varied story of colonization so singular and so humiliating as that which treats of the settlements of the English in Australia. The first ships which arrived out there had quitted England without means or plans. It was not until they landed, to the number of a thousand and thirty men, at the spot now known as Sydney, that they thought of the need that would arise for carpenters, bricklayers, and other artisans. No proper provision had been made before sailing,—and it was by mere chance that a bricklayer happened to be in the list of the convicts. This man—a felon of the lowest character—became at once an important personage. For lack of a proper supply of good workmen from the mother country, any convict with a trade in his fingers rose into a figure, while the unskilled were treated like beasts of burden. As illustrations of the anomalies of the early time—the early time of Australia being just fifty years ago,—Mr. Sidney writes:—

"At one time 'a person named Smith, on his way to India, professing some knowledge of agriculture,' is engaged by the Government, and created a peace officer at Rosehill, the site of the future town of Paramatta, the said Smith being apparently the only free man with any claims to the kind of knowledge on which the subsistence of the colony was likely to depend. At another, one Briant, a Devonshire prisoner, employed in his calling of a fisherman, is detected in secreting and selling large quantities of fish, and is severely punished; but, 'being too useful

a person to part with, and send to the Brick Cart,' he is retained to fish for the settlement. This man afterwards escaped with his family and a party of other prisoners in an open boat to the island of Timore; he was there captured by a man-of-war, and carried to Batavia, where he died. His wife was conveyed to England, tried, and confined in Newgate until the term of her original sentence expired! Then we find convicts, 'when little more than two years had elapsed,' claiming their discharge on the ground that the time of their sentence had expired, which was possible as it would date from the day of their sentences. When, in answer to these claims, inquiries are made for the documents containing the particulars, 'it is found that they have been left in England, and that, therefore, it is impossible to affirm or deny the claims.' Consequently, the prisoners are told that they must wait for an answer to a despatch to be sent by the first opportunity to England, a period of two or three years. One of the prisoners, not very well pleased with the prospect of such delay, expresses himself disrespectfully to the Lieutenant-Governor in the presence of the Governor. Thereupon he is seized, tried by a criminal court, found guilty, and sentenced to receive six hundred lashes, and wear irons for the space of six months."

In Mrs. Chisholm's papers we find still more striking illustrations of the social history of Australia. Joseph Smith's confessions, written down in 1845 by the philanthropic lady, in his own words, run thus:—

"I arrived in the colony fifty-six years since; it was Governor Phillip's time, and I was fourteen years old; there were only eight houses in the colony then. I know that myself and eighteen others laid in a hollow tree for seventeen weeks; and cooked out of a kettle with a wooden bottom: we used to stick it in a hole in the ground and make a fire round it. I was seven years in service (bond), and then started working for a living wherever I could get it. There was plenty of hardship then: I have often taken grass, and pounded it, and made soup from a native dog. I would eat anything then. For seventeen weeks I had only five ounces of flour a day. We never got a full ration, except when the ship was in harbour. The motto was, 'kill them, or work them, their provision will be in store.' Many a time have I been yoked like a bullock with twenty or thirty others to drag along timber. About eight hundred died in six months at a place called Toongabbie, or Constitution-hill. I knew a man so weak, he was thrown into the grave, when he said, 'don't cover me up; I'm not dead; for God's sake don't cover me up!' The overseer answered, 'D— your eyes, you'll die to-night, and we shall have the trouble to come back again!' The man recovered; his name is James Glasshouse, and he is now alive at Richmond. They used to have a large hole for the dead; once a day men were sent down to collect the corpses of prisoners, and throw them in without any ceremony or service. The native dogs used to come down at night and fight and howl in packs, gnawing the poor dead bodies. The Governor would order the lash at the rate of five hundred, six hundred, to eight hundred; and if the men could have stood it they would have had more. I knew a man hung there and then for stealing a few biscuits, and another for stealing a duck frock. A man was condemned—no time—take him to the tree and hang him. The overseers were allowed to flog the men in the fields. Often have men been taken from the gang, had fifty, and sent back to work. Any man would have committed murder for a month's provisions: I would have committed three (murders), for a week's provisions! I was chained seven weeks on my back for being out getting greens, wild herbs. The Rev. — used to come to me tightly to force some confession. Men were obliged to tell lies to prevent their bowels from being cut out by the lash."

This settler's wife made the following statement.—

"I have seen Dr. — take a woman who was in the family way, with a rope round her, and duck her in the water at Queen's Wharf. The laws were bad then. If a gentleman wanted a man's wife, he would send the husband to Norfolk Island. I have

seen a man flogged for pulling six turnips instead of five. One Defrey was overseer, the biggest villain that ever lived—delighted in torment. He used to walk up and down and rub his hands when the blood ran. When he walked out, the flogger walked behind him. He died a miserable death—maggots ate him up, not a man could be found to bury him. I have seen six men executed for stealing twenty-one pounds of flour. I have seen a man struck when at work with a handspike, and killed on the spot. I have seen men in tears round Governor —, begging for food. He would mock them with 'Yes, yes, gentlemen; I'll make you comfortable; give you a nightcap and a pair of stockings.'

—Mrs. Chisholm adds, "Mrs. Smith was blind: she acted as she spoke, and wept on recalling the horrors of her early life."—We may further add, as a characteristic illustration, that when Mrs. Chisholm was about to leave the settler's homestead, Smith presented her with a loaded pistol, which he pulled from his own belt, as a souvenir, assuring her that "she might depend on it!"

It is difficult to accept in their unmitigated significance such horrors as the above:—especially on the testimony of men who no doubt had wrong enough to make them passionate witnesses. It is certain, that matters were grievously bad. —A succession of governors, most of them extremely unfit to rule the rising colony—men with no system and no ideas—led to the installation of Capt. Bligh,—raised to this eminence as a reward for his bold cruise in an open boat after the mutiny on board his ship; and he has the distinction of having caused the first and last military revolution on that continent. Macquarie succeeded him in his office.—

"He was the first man of decided talent appointed to office in Australia. He was distinguished by his self-reliance and constant energetic action. If the comparison had not been vulgarised, one might liken him, comparing small with great, to Napoleon. His was the same order of mind—views narrow but clear—essentially a materialist in politics. In New South Wales, wealth was the visible sign of success, and Macquarie rewarded success wherever he found it. He made roads, erected public buildings, and again and again traversed the whole length and breadth of the colony, following closely in the footsteps of new explorers, distributing grants to skilful settlers, planning townships, and pardoning industrious prisoners. His activity was untiring, his vanity boundless. He seldom condescended to ask advice, and, when he did, generally followed his own opinion. With charming *naïveté* he observes, in answer to a despatch from the Secretary of State, informing him that it was *not* the intention of the Government to appoint a council to assist the Governor, as had been recommended, 'I entertain a fond hope that such an institution will never be extended to this colony.' Even the recommendation of secretaries of state he disregarded; and, as he was successful, he was permitted to pursue his own course. He infused his own active spirit into the settlers, and under its influence the material progress of the colony was extraordinary. Higher praise his administration scarcely deserves. The moral, not to say the religious, tone of the settlement owes little to his care. One instance will suffice. He requested, in one of his despatches, that as many men convicts as possible should be transported, as they were useful for labour, but as few women, as they were costly and troublesome; thus losing sight altogether of the inevitable demoralization which must be the result of a community of men. He has been much attacked for saying 'that the colony consisted of those who had been transported, and those who ought to have been;' and, 'that it was a colony for convicts, and free colonists had no business there;' but there was truth at the bottom of both these rude speeches."

The story of nearly all these governors reads more like the tale of an imperial pro-consul ruling over a conquered province than like that of Englishmen ruling men of the same blood and language as themselves. Governor Darling

assumed, in the discharge of his duties, powers which no sovereign in England has claimed since Charles the First or exercised since Henry the Eighth. Of this there was a remarkable instance, which Mr. Sidney has thus briefly related.—

"Sudds and Thompson were two private soldiers in the 57th Regiment, doing duty in New South Wales in 1825, the second year of Sir Ralph Darling's reign. Thompson was a well behaved man, who had saved some money; Sudds was a loose character. They both wished to remain in the colony. In New South Wales they saw men who had arrived as convicts settled on snug farms, at the head of good shops, and even wealthy merchants and stockowners. As to procure their discharge was out of the question, Sudds, the scamp, suggested to Thompson that they should qualify themselves for the good fortune of convicts, and procure their discharge by becoming felons. Accordingly they went together to the shop of a Sydney tradesman and openly stole a piece of cloth, were, as they intended, caught, tried, convicted and sentenced to be transported to one of the auxiliary penal settlements for seven years. In the course of the trial the object of the crime was clearly elicited. It became evident that the discipline of the troops required to keep guard over the large convict population would be seriously endangered if the commission of a crime enabled a soldier to obtain the superior food, condition and prospects enjoyed by a criminal. Accordingly, Sir Ralph Darling issued an order under which the two soldiers, who had been tried and convicted, were taken from the hands of the civil power, and condemned to work in chains on the roads of the colony for the full term of their sentence, after which they were to return to service in the ranks. On an appointed day the garrison of Sydney were assembled and formed in a hollow square. The culprits were brought out, their uniforms stripped off and replaced by the convict dress, iron-spiked collars and heavy chains, made expressly for the purpose by order of the Governor, were rivetted to their necks and legs, and then they were drummed out of the regiment, and marched back to gaol to the tune of 'The Rogue's March.' Sudds, who was in bad health at the time of his sentence from an affection of the liver, overcome with shame, grief, and disappointment—oppressed by his chains, and exhausted by the heat of the sun on the day of the exposure in the barrack square—died in a few days. Thompson became insane."

—For its political results, this illegal act of the Governor—in re-judging the judged, and aggravating the punishment already awarded by the law,—was one of the most important incidents in the political history of Australia. It led to the decline of the purely military and despotic character of the government.

Irish Ethnology, Socially and Politically Considered. By George Ellis, M.B. Dublin: Hodges & Smith; London, Hamilton & Co.

ALTHOUGH we know little more perhaps of the races of men than we did at the latter end of the last century,—our knowledge of the differences between the various races has wonderfully increased within the last few years. Yet, powerful political and philanthropic reasons have concentrated the attention of our countrymen rather on the resemblances than on the differences between the varieties of mankind. To assist towards the throwing off of that disgrace of our race, the slave trade and slavery, the attention of the public mind was directed to the points in common between the Negro and the Saxon. The increasing demand for political freedom amongst the nations of the earth has been always enforced by the assumption that all men resemble the Saxon race sufficiently to flourish under free political institutions. That these resemblances have been pushed further than they should, for the purpose of arriving at the great objects for which they were adduced, we do not mean to assert;

but it is certain, that there are mental and moral differences in the varieties of mankind which render it highly unphilosophical to assert that one system of government, or one form of religion, is best for all nations under all circumstances. We are not disposed to agree with those who, like Dr. Knox, believe, with marvellous inconsistency, that race is ineradicable, at the same time that they believe that species are transmutable; but we believe that the present varieties of mankind have all come from a parent stock, and are capable, more or less, of approaching each other under the influence of external circumstances. We can never produce those circumstances, however, by political arrangements; and where a government finds itself called on to guide the affairs of two races, the differences between them should not be lost sight of in the application of legislative enactments. That the mass of the inhabitants of two contiguous islands, Great Britain and Ireland, belong to different varieties of the human race, no one will deny;—and the question of how far the same government is adapted to the two countries, is one of the most important political problems of the day.

To solve some of the knotty points relating to Ireland and her Saxon rulers, is the object of this little work. It is written with intelligence, and evidently with considerable knowledge of Irish character; and in the suggestions made for the improvement of the condition of Ireland there is nothing wild or visionary. The author's plans for relief are founded on a study of the characteristics of the two great European races, Celt and Saxon. The chapters devoted to the exposition of the differences of the two races are carefully written, and appeal strongly for their truth to the consciousness of those who belong to either. Take the following passage as an example.—

"The progress of civilization in the two great modern representatives of the respective races, England and France, may be taken as another illustration of permanent mental differences. The early histories of these two countries were in many respects alike. Both were subjected to Roman sway for about the same periods. Into both, when this had elapsed, was introduced the feudal system, with its train of military oppressors, the great lords or barons, whose frequently abused privileges set at naught all justice and defied even regal authority. In both, the struggle between sovereign power and baronial ambition was long maintained. How different the results in each! Step by step, as the fortunes of the great contest swayed to one side or the other, openings were presented to the popular masses, the great third estate in embryo, to secure privileges for their order and assert the natural rights of man. Step by step in England, these hard-won privileges (occasionally lost in part, but always recovered with interest, through centuries of stubborn resistance and heroic but well regulated aggressions on power,) were multiplied and consolidated into that broad and stately edifice—the exponent of the representative principle—the British constitution, to which despots look with trembling, and their victims in every part of the world with hope. The same contest between sovereign and feudal lord prevailed long in France—also with varying success. The same advantageous openings were presented to the masses; but no benefits accrued. Kings were worsted; but the people still suffered. Nobles were humbled; but the people were not raised. None struggled for true liberty, and this strife of ages terminated at last in one uncontrolled and unmitigated despotism, to be succeeded by such alternations of anarchy with sudden returns to centralization, that the policy of France is no longer trusted; the oppressed fear to ask her aid or sympathy; and absolutism almost inclines to place its best hopes in her inconsistency."

The author hopes nothing from the Celtic races independently of the Saxon; and much that he says on this subject is evidently borne out by fact. Where the population of Ireland

is purely Celtic, there, from whatever causes, it is least prosperous. Speaking of the rapid spread of the sewed or flowered muslin manufacture, the writer says:—

"This excellent branch of industry, which originated in the Saxon north, is found to return considerable profit to its projectors, and it is on this sound commercial principle that its benefits are extending. Certain Scotch houses, following it up as a good speculation, have lately sent agents to remote parts of Ireland, and established a regular system of female industrial employment which, in its silent operation, has already effected more real good, both morally and physically, than any compulsory interference with private charity or with tenure of land, or other much lauded panaceas, could ever accomplish. As one instance, among many, of the large amount of labour already in action through this system, it may be mentioned that in a small town in one of the most distressed parts of the county of Donegal, and the district immediately around it, several hundred pounds have been paid weekly during the last year for this description of work; and by it alone the entire population of the barony may be almost said to have been kept alive. One promising feature of the speculation is, that the supply of hands is not nearly equal to the demand. The success of this simple plan points to the true method of dealing with Irish difficulties. From the Saxon, it is plain, must come the 'encouragement' which to the prostrate Celt is indispensable. This encouragement must be spontaneously given and spontaneously received. The principle on which its growth depends is the principle of all industrial operations in a free country—mutual benefit to employer and employed. Any speculation which has this principle for its basis, in a country like Ireland where the elements of wealth abound, may be expected to succeed; provided, on the one hand, that the speculator possesses capital and intelligence, and, on the other, that freedom of action is permitted him in the employment of labour and the expenditure of his means. The former requisites are close at hand, in the wealth, skill, and enterprise of the Saxon race in the north of Ireland, in Scotland, and in England, and would long since have flowed in a copious stream over the rich field presented by the rest of Ireland, were it not that the latter requisite to success was deficient:—freedom of action was not permitted. Dense ignorance, prejudices deep and long cherished, natural propensities unrestrained by law and stimulated by secret combination, interrupted all attempts at improvement, and too often banished the true friends of Ireland from her shores."

The author advocates very strongly making Galway an Atlantic port,—and recommends the carrying out more vigorously of the provisions of the Encumbered Estates Act.—His work will command attention from the wise and temperate spirit in which it is written.

The Life and Works of Robert Burns. Edited by Robert Chambers. In Four Volumes. Vol. IV. Chambers.

This is the concluding volume of an edition of Burns in which the works are interwoven with the life—and to which we have during its progress more than once directed attention. The concluding volume contains little new matter, and that little of no great value.

It may be interesting to be told—for biography has to be made up of trifles well put together—that Burns at one time paid 22s. a pair for his boots (the boots no doubt so characteristically portrayed in Nasmyth's full-length portrait prefixed to Mr. Lockhart's *Life of the poet*)—and that the poet's wife "was one of the first persons in Dumfries who appeared in a dress of gingham." These are little points characteristically recovered by Mr. Chambers, and for which he must have our thanks according to their value; but when he seeks to make us share his delight at finding a living person who remembers that one of Burns's letters to the father of his Chloris (the "lassie with the lint-white locks") began and ended

with "Coming, Sir," we can only wonder that any importance should be attached to such a discovery. The truth is—as we have before said,—Mr. Chambers, warmed by his subject, seeks information with a drag net,—and though he does not frequently fish in rich waters, he is not unsuccessful in his fishing. All his fish, however, in his opinion, are salmon, at the least,—while many of them seem to us of about the size, without the much approved savour and quality, of white bait.

Mr. Chambers has taken, he tells us, great pains with the text of the poet. So far as the poetry is concerned, we feel that he has:—but the labour of collation would not appear to have extended to the letters. Dr. Currie, it is now well known, played the part of an earlier Jared Sparks with Burns's correspondence, and went even further in the wrong way of editorship:—for he not only omitted paragraphs, but he altered the sense, and even added to what the poet wrote. Now, this unjustifiable proceeding on the part of Currie did not become fully known to Mr. Allan Cunningham, the subsequent editor of the poet, until he had published his edition in eight volumes. When that edition had extended the interest felt in Burns's works (his prose more especially), Mr. Cunningham was, we know, intrusted with many original letters for the purpose of collation. This was to him a labour of love; and it will be seen on comparison of the text of several of the letters printed by Currie, and now by Mr. Chambers, with the text as printed in the edition of Mr. Cunningham's "Burns" published by Mr. Virtue, that for the latter recourse has been had on several occasions to the poet's original MSS. Two letters, properly restored by Mr. Cunningham in Virtue's edition, and incorrectly printed by Dr. Currie, and by every other previous editor, are also included in the volume before us. We allude to the poet's last letter to Johnson (p. 201)—and to the letter to McMurdo (p. 52). In the letter to Johnson there are several omissions; and in the letter to McMurdo there is this addition—"A very few of them are my own":—an important addition when we know that Currie's addition refers to the original of a well-known, but we are happy to say scarce, collection of songs called 'The Merry Muses,' printed at Dublin,—and in which, though the volume was published when Burns was dead, emanations of his genius in its wildest mood are distinctly traceable in almost every page.

If Mr. Chambers's present volume, unlike its predecessors, contains no new matter of Burns's meriting quotation—his own writing will be found to supply at times passages that will be read with interest,—and those, too, on points of the poet's life on which Mr. Chambers has a right to be heard with attention. He has taken up the subject of the income of Burns with all the solicitude of a Commissioner in the Insolvent Court.—

"The stated official income of Burns was 50*l.* a year, which usually became 70*l.*, in consequence of extra allowances for certain departments of business. It has been surmised that he had to keep a horse out of this little income; but in reality, when a horse was required during the Dumfries period of his life, he was accustomed to hire one from an inn, and his expense was charged to the service. There seem to have been other sources of official income, of a more precarious nature: on the back of a song in his handwriting, he has noted what follows:—'I owe Mr. Findlater 6*l.* 8*s.* 5*d.* My share of last year's fine is 12*l.* 2*s.* 1*d.* W. M., 14*l.* 3*s.* 6*d.*' If this was anything like the average of some other perquisite, it would make up Burns's official revenues to something above 80*l.* a year. It may also be remarked, that his son, Mr. Robert Burns, believes that the poet occasionally derived a little income from land-surveying—a business for which his Kirkcaldy edu-

cation had laid the foundation of his qualifications. Add to all this the solid perquisites which he derived from seizures of contraband spirits, tea, and other articles, which it was then the custom to divide among the officers, and we shall see that Burns could scarcely be considered as enjoying less than 90*l.* a year. This, indeed, is but a humble income in comparison with the deserts of the bard; yet it is equally certain, that many worthy families in the middle ranks of life in Scottish country towns were then supported in a decent manner upon no larger means; and very few men of the poet's original profession, out of East Lothian and Berwickshire, drew larger incomes from their farms. It is therefore not surprising to learn that Burns, though now and then forced to be beholden to a friend for a small temporary loan—we have seen an example of this when a failure of importation closed one of his sources of extraordinary income—did, nevertheless, in general maintain his household in some reasonable degree of comfort. I have consulted the eldest son of the bard on this subject, and find his views of the paternal *ménage* at Dumfries very much the same as those with which many little circumstances have impressed myself. Mr. R. B. speaks of the house in the Mill Vennel as being one of a good order, such as were used in those days by the better class of citizens, and the life of his father and mother as being comparatively genteel life. They always had a maid-servant, and sat in their parlour. That room, and the two principal bedrooms, were carpeted, and otherwise well furnished. The poet possessed a mahogany dining-table, where he often had good company assembled. In the same room stood his folding-down desk, at which he had to do a considerable amount of business in the granting of licences, permits, &c., and where the son remembers seeing him writing his letters to Mr. Thomson, always a business requiring a good deal of care. There was much rough comfort in the house not to have been found in those of ordinary citizens; for, besides the spoils of smugglers, as above mentioned, the poet received many presents of game and country produce from the rural gentilefolk, besides occasional barrels of oysters from Hill Cunningham, and other friends in town, so that he possibly was as much envied by some of his neighbours as he has since been pitted by the general body of his countrymen."

Burns's debts Mr. Chambers considers in a note;—though the expenditure of a poet being too often greater than his receipts, the passage should have stood in the text, and in large type, confronting the income with manly independence.—

"It has been repeatedly stated in so many words, that Burns died free of debt. This, even by his own confession (letter to his brother, July 10, 1796), is not strictly true. Besides the amount of the unfortunate account which had been presented at so unsuited a time, he had small accounts due to other tradesmen. The poet would also appear to have never quite succeeded in squaring accounts with his landlord, Captain Hamilton. The interest of his countrymen about every authentic particular respecting Burns, seems to give these small matters a title to be noticed. I deem it probable, after all, that the total amount of our poet's debts did not much exceed thirty pounds. The following letter from Gilbert Burns to Mr. Wallace, writer in Dumfries, throws some light on the subject, while still further confirming the fact, that Mr. James Clarke, the schoolmaster, was a debtor of Burns:—

Mossgiel, 1st Jan. 1797.

"Mr. Wallace—Sir, I intended to have been in Dumfries about this time, to have paid off my brother's debts; but I find much difficulty in sparing as much money. I think of offering Captain Hamilton and Mr. Williamson the half of their accounts, and begging a little time to pay the other half. If Mr. Clark pay up his bill, I hope to be able to pay off the smaller accounts. I beg you will write me your opinion immediately on the subject. Will you have the goodness to mention this to them, which will save me some uneasiness when I come to Dumfries, which I think will be in two or three weeks, unless I have occasion to delay it till Dumfries fair? I beg that you will smooth the way to me in this

business as much as you can. I do feel much hurt at it; but, as I suppose the delay can be no great inconvenience to the gentlemen, I hope they will be indulgent to me. I am, sir, your most obedient humble servant,
GILBERT BURNS."

Few biographical descriptions, if faithfully given and picturesquely written, are read with greater interest than the daily life of a great poet. Here is an attempt at this kind of writing, lacking the charm of personal knowledge, and somewhat exaggerated we fear as far as Mrs. Burns is concerned.—

"So existence flows on with Burns in this pleasant southern town. He has daily duties in stamping leather, gauging malt-vats, noting the manufacture of candles, and granting licences for the transport of spirits. These duties he performs with fidelity to the king and not too much rigour to the subject. As he goes about them in the forenoon, in his respectable suit of dark clothes, and with his little boy Robert perhaps holding by his hand and conversing with him on his school exercises, he is beheld by the general public with respect as a person in some authority, the head of a family, and also as a man of literary note; and people are heard addressing him deferentially as Mr. Burns—a form of his name which is still prevalent in Dumfries. At a leisure hour before dinner, he will call at some house where there is a piano—such as Mr. Newall, the writer's—and there have some young miss to touch over for him one or two of his favourite Scotch airs, such as the *Sutor's Daughter*, in order that he may accommodate to it some stanzas that have been humming through his brain for the last few days. For another half hour, he will be seen standing at the head of some cross street with two or three young fellows, bankers' clerks, or 'writer-chiels' commencing business, whom he is regaling with sallies of his bright but not always innocent wit—indulging there, indeed, in a strain of conversation so different from what had passed in the respectable elderly writer's mansion, that, though he were not the same man, it could not have been more different. Later in the day, he takes a solitary walk along the Dock Green by the river-side, or to Lincluden, and composes the most part of a new song; or he spends a couple of hours at his folding-down desk, between the fire and window in his parlour, transcribing in his bold round hand the remarks which occur to him on Mr. Thomson's last letter, together with some of his own recently composed songs. As a possible variation upon this routine, he has been seen passing along the old bridge of Devorgilla Balliol, about three o'clock, with his sword-cane in his hand, and his black beard unusually well shaven, being on his way to dine with John Syme at Ryedale, where young Mr. Oswald of Auchincruive is to be of the party—or may be in the opposite direction, to partake of the luxuries of John Bushby, at Tinwald Downs. But we presume a day when no such attraction invades. The evening is passing quietly at home, and pleasant-natured Jean has made herself neat, and come in at six o'clock to give him his tea—a meal he always takes. At this period, however, there is something remarkably exciting in the proceedings of the French army under Pichegru; or Fox, Adam, or Sheridan, is expected to make an onslaught upon the Ministry in the House of Commons. The post comes into Dumfries at eight o'clock at night. There is always a group of gentlemen on the street, eager to hear the news. Burns saunters out to the High Street, and waits amongst the rest. The intelligence of the evening is very interesting. The Convention has decreed the annexation of the Netherlands—or the new treason-bill has passed the House of Lords, with only the feeble protest of Bedford, Derby, and Lauderdale. These things merit some discussion. The trades-lads go off to strong ale in the closes; the gentlemen slide in little groups into the King's Arms Hotel or the George. As for Burns, he will just have a single glass and a half-hour's chat beside John Hyslop's fire, and then go quietly home. So he is quickly absorbed in the little narrow close where that vintner maintains his state. There, however, one or two friends have already established themselves, all with precisely the same virtuous intent. They hardly greet the bard. Meg or John bustles about to give him his accustomed place, which no one ever disputes,

And, somehow, the debate on the news of the evening leads on to other chat of an interesting kind. Then Burns becomes brilliant, and his friends give him the applause of their laughter. One jug succeeds another—mirth abounds—and it is not till Mrs. Hyslop has declared that they are going beyond all bounds and she positively will not give them another drop of hot water, that our bard at length betinks him of returning home, where Bonnie Jean has been lost in peaceful slumber for three hours, after vainly wondering 'what can be keeping Robert out so late the night.' Burns gets to bed a little excited and worn out, but not in a state to provoke much remark from his amiable partner, in whom nothing can abate the veneration with which she has all along regarded him. And though he beds at a latish hour, most likely he is up next morning between seven and eight, to hear little Robert his day's lesson in *Cæsar*, or if the season invites, to take a half-hour's stroll before breakfast along the favourite Dock Green."

We shall return to this volume next week.

The Israel of the Alps: a History of the Persecution of the Waldenses. By the Rev. Dr. Alexis Muston. Translated from the French by W. Hazlitt. Ingram & Co.

The Glacier Land. By Alexander Dumas. Simms & McIntyre.

We put these books together for the sake not of resemblance, but of contrast. They are both laid in Alpine scenes—both are translations from the French; but there is no parallel between them. Dr. Muston is severe, dramatic, terrible.—M. Dumas, light, gay, impertinent. The one author writes history, the other writes gossip. Both exhibit power enough to fix attention on the stories which they tell; but the pastor aims at making his reader think, while the self-styled *philosophe* is satisfied if he can make him laugh.

The story of the Vaudois is one of those striking episodes in the history of mankind which cannot be written too often nor studied from too many points of view. A people few in number, shut out from commerce with the world by wild mountain ranges, keeping alive through centuries of darkness, and in the midst of universal corruption, a few sacred sparks of the earlier and better lights, would be of itself a spectacle to command attention; but when to this noble tenacity of the good that was given them in charge is added the romance of such a story as that of the Vaudois presents—illustrated as it was by deeds of personal heroism, by unequalled patience, by a simplicity which knew no craft, and a constancy that had no death—the interest of the story becomes supreme.

The words attributed to the legate of Innocent the Third when the soldiers asked him whom they should spare—"Spare none: God will protect his own"—indicate the character of all the wars waged against the Vaudois from the days of Simon de Montfort down to the eighteenth century. The soldiers did as they were told. "Wherever I look," says the contemporary historian, the Abbot of Génévieve, "nothing but cities consumed by flames and houses in ruin meet me. The perils which environ me cause the image of death to be never absent from my thoughts." Of the mode in which the Papal agents executed their instructions, we take the following instance from the book before us.—

"It was in the month of June, 1488, that this worthy legate of the pope, having fruitlessly essayed to subjugate the valleys of Piedmont, passed into France by Mont Genevre, where he caused to be strangled eighteen of these poor folk whom he had made prisoners. Thence he made an onslaught upon Briançon, a town which had been indicated to him as a nest of heresy; and from this marched upon Frayssinières, whose few and poorly armed inhabitants retired to a rock overlooking the church, where they were surrounded by the troops, and made prisoners. Cataneo's ferocious fanatics thence entered

the deep gorge of Val-Louise. The Vaudois, feeling that they could not resist a force twenty times greater than their own, abandoned their poor habitations, placed their old people and children in their rustic carts, with their domestic utensils and such provisions as they could collect, and driving their herds before them, and singing canticles, retired to the rugged slopes of Mont Pelvoux. This part of the Alps, which has since been named the Visol Briançonnais, rises more than 6,000 feet above the level of the valley. A third of the way up there is an immense cavern, called Aigue-Froide or Ailfrede, from the cold springs, nourished by the snows, which are found there. A sort of platform, accessible only over fearful precipices, extends at the mouth of the cavern, the majestic vault of which, after subsiding into a narrow passage, expands once more into an immense hall, of irregular form. Such was the asylum which the Vaudois had selected. They placed at the extremity of the grotto, the women, children, and old men; the cattle and sheep occupied the lateral cavities of the rock, and the able-bodied men posted themselves towards the mouth of the cavern, which, after having first barricaded with large rocks the path that led to the grotto, they had walled up with similar materials. Cataneo states, in his Memoirs, that they had with them provisions for more than two years. All their precautions thus taken, they deemed they had nothing to fear; but in reality they had to fear this very confidence in mere human precautions. Cataneo had with him a daring and experienced leader, named La Palud. This captain, seeing the impossibility of forcing the entrenchments of the grotto on the side by which the Vaudois had reached it, led his own men back into the valley; then, with all the ropes he could collect, he ascended Mont Pelvoux, and, making his way to the precipice overhanging the entrance to the cavern, descended, by means of the ropes, to the platform. Nothing could have been more easy than for the Vaudois either to have cut the ropes, or to have slain each soldier before he reached the ground, and then hurled them into the abyss; but a panic terror seized the unhappy besieged. Some who rushed out from the cavern precipitated themselves down the rocks: those who essayed resistance were slaughtered by La Palud, who then, not venturing to involve his men in the depths of the cavern, piled up all the wood he could collect at the entrance, and setting fire to it, those who attempted to issue forth were either destroyed by the flames, or by the sword of the enemy, while those who remained within were stifled by the smoke. When the cavern was afterwards examined, there were found in it four hundred infants suffocated in their cradles, or in the arms of their dead mothers. Altogether there perished in this cavern more than 3,000 Vaudois—including the entire population of Val-Louise. Cataneo distributed the property of these unfortunates among the vagabonds who accompanied him, and never again did the Vaudois church raise its head in those blood-stained valleys."

The lives of the Vaudois martyrs would fill many a volume. Here is part of a list.—

"There is no town in Piedmont, under a Vaudois pastor, where some of our brethren have not been put to death. Jordan Terzano was burned alive at Suza; Hippolyte Rossiero at Turin; Michael Goneto, an octogenarian, at Sarcena; Villermin Ambrosio hanged on the Col di Meano; Hugo Chiampis, of Fenestrelle, had his entrails torn from his living body, at Turin; Peter Geymarali, of Bobbio, in like manner, had his entrails taken out at Luzerna, and a fierce cat thrust in their place to torture him further; Maria Romano was buried alive at Rocca-patia; Magdalen Foulano underwent the same fate at San Giovanni; Susan Michelini was bound hand and foot, and left to perish of cold and hunger on the snow at Sarcena. Bartholomew Fache, gashed with sabres, had the wounds filled up with quick-lime, and perished thus in agony at Fenile; Daniel Michelini had his tongue torn out at Bobbio for having praised God; James Baridari perished, covered with sulphureous matches, which had been forced into his flesh under the nails, between the fingers, in the nostrils, in the lips, and over all his body, and then lighted. Daniel Revelli had his mouth filled with gunpowder, which, being lighted, blew his head to pieces. Maria Monnen, taken at Lioussa, had the flesh cut from her cheek and chin bones, so that her jaw was left bare,

and she was thus left to perish. Paul Garnier was slowly sliced to pieces at Rom; Thomas Margueti was mutilated in an indescribable manner at Mirahoco, and Susan Jaquin cut in bits at La Torre. Sara Rostagnol was slit open from the legs to the bosom, and left so to perish on the road between Eyrat and Luzerna; Anne Charbonniea was impaled, and carried thus on a pike, as a standard, from San Giovanni to La Torre. Daniel Rambaud, at Paesano, had his nails torn off, then his fingers chopped off, then his feet and his hands, and then his arms and his legs, with each successive refusal on his part to abjure the gospel. In March 1536, Martin Gonin, pastor of Angrogna, was seized on his return from Geneva, at Grenoble, and, after a mock trial, taken from his prison at night and drowned in the Isere. In June, 1536, Barthelemi Hector, of Poitiers, was burned at Turin, for having sold copies of the Bible to the shepherds of the Alps. In 1555, a pastor of Geneva, Jean Vernoux, one of the earliest fellow-labourers with Calvin, Antoine Laborie Quercy, who had quitted the magistracy in order to devote himself more actively to the cause of the gospel, and three friends of theirs, Batailles, Tauran, and Tringalet, were, on their way to the Vaudois valleys, seized by the *maréchaussée*, in the gorges of the Col Tamis, and, after a lengthened interrogatory before the court of Chambery, were all burned in one fire."

Once only did England raise her voice against the continuance of these atrocities,—and that was, when Milton was Foreign Secretary and Blake master of the Mediterranean. Cromwell's earnest protests, his letters to foreign powers, his instructions to the sea general, his missions to Turin, were of immense and immediate importance to the Valleys; but the causes which led to his interference in the concerns of those remote mountain regions had been of the most terrible kind. The soul sickens even now at the recital of the sanguinary acts of that time,—and we can well understand, after reading the graphic pictures of Leger, the excitement and indignation which pervaded Puritan England, and which were so energetically expressed in Milton's letters.—

"On Saturday, 24th April, 1655, at four o'clock in the morning, the signal for a general massacre of the Vaudois was given to the traitorous troops from the tower of the castle of La Torre. The soldiers, forewarned, had risen early, fresh with the sleep they had enjoyed under the roofs of those they were about to slaughter. The men whom, under the solemn engagement of security and protection, the Vaudois had fed and housed, were now on foot, throughout the valley, converted, by the arts of Rome, from brave soldiers into cowardly assassins. To give an adequate idea of the horrors that ensued, one's eye must, at a single glance, comprehend the entire valley, take in each house, each room, view every act of death and torment, distinguish, amid the immense voice of aggregate anguish and desolation, each particular cry of destroyed honour, of parting existence. Literally, indeed, did the unhappy Vaudois suffer the things of which the apostle speaks: 'They were stoned, they were sawn asunder, were tempted, were slain with the sword: they wandered about in sheepskins and goatskins; being destitute, afflicted, tormented; (of whom the world was not worthy:) they wandered in deserts and in mountains, and in dens and caves of the earth.' Young children, writes Leger, were torn from their mothers' arms, dashed against the rocks, and their mangled remains cast on the road. Sick persons and old people, men and women, were burned alive in their houses, or hacked in pieces, or mutilated in horrible ways, or flayed alive, or exposed bound and dying to the sun's noontide heat, or to ferocious animals; some were stripped naked, bound up in the form of a ball, the head forced down between the legs, and then rolled over precipices; some of these poor creatures, torn and mangled by the rocks, but stayed in their downward progress by the branch of a tree, or other prominence, were seen, forty-eight hours after, still lingering in all the torments of pain and famine. Women and girls, after being fearfully outraged, were impaled on pikes, and so left to die, planted at angles of the road; or they were buried alive; or, impaled as above, they were roasted before

a slow fire, and their burning bodies cut in slices, by these soldiers of the faith, as by cannibals. After the massacre, such children as survived, and could be seized, were carried off, and cast, like lambs into a slaughter-house, into the monasteries and convents and private abodes of the propagandists. Next, after massacre and abduction, came incendiarism: monks and priests, and other zealous propagandists, went about with lighted torches and projectiles, burning down the houses, previously ensanguined by the soldiers with the blood of their owners and their families. The terrible narrative given by Leger of these atrocities was prepared by him from the testimony of eye-witnesses, who gave their depositions before two notaries, who accompanied him from commune to commune for that purpose. The pen, he says, well-nigh fell from his hand, as he transcribed the horrible details. Here, a father had seen his children cut in pieces by the sword, or absolutely torn limb from limb by four soldiers; there the mother had seen her daughter cruelly massacred before her face, after having been as cruelly outraged; there the sister had seen her brother's mouth filled with gunpowder, and the head then blown to atoms; there the husband had seen his wife, about to become a mother, treated in a manner which it would outrage humanity to describe. Of these, the eyes were torn from the head; of those, the nails from the fingers; some were tied to trees, their heart and lungs were cut from them, and they were thus left to die in anguish. The universal conflagration of the Vaudois houses succeeded the massacre of their inhabitants. In several communes, not a single cottage was left standing; so that this fair valley of Luzerna, as Leger expresses it, resembled a burning furnace, whence cries, fewer and fainter, attested that a people had lived."

The energetic interposition of Cromwell procured peace for the valleys:—in many places it was unhappily only the peace of the desert. A public subscription opened in London for the relief of the survivors amounted to nearly 40,000*l.*,—22,000*l.* of which was sent over to the Vaudois. But the Restoration now occurred,—England ceased to meddle in continental matters,—and Charles the Second put the rest of the money into his own pocket!

From these dark scenes, it is a relief to pass into the Alps of the present day under the guidance of so gay and laughter-loving a companion as Alexander Dumas. How characteristic in its light "Pistol" way is the Preface to his 'Glacier Land'! He says:—

"On the 15th of April, 1832, on returning to my room, after taking leave of my two excellent and celebrated friends, Litz and Boulanger, who had been quaffing strong black tea with me as a remedy against the prevailing plague, I suddenly felt a weakness in my limbs; a tremor passed through my frame; my head reeled; and I had to grasp the table to prevent myself from falling. In a word, I had the cholera. Whether it was Asiatic or European, epidemic or contagious, I am entirely ignorant; but this I know, that, feeling a few moments more would deprive me of the power of utterance, I made one last effort, and called for sugar and ether instantly. My house-keeper, an intelligent woman enough, having frequently seen me dip sugar in rum, after dinner, and swallow it, concluded I now wished something of the kind; and filling a liqueur-glass with pure ether, into which she popped the largest lump of sugar she could find, brought in the beverage, just at the moment I had thrown myself on the bed, freezing in every member. Scarcely conscious, I mechanically extended my hand, felt something placed within it, and heard the words, 'Swallow this monsieur; it will do you good.' So I raised this something to my lips, and swallowed it—that is to say, half a phial of pure ether. To describe the convulsions caused by this diabolical liquid, as it traversed my torso, would be impossible, for I lost all consciousness almost immediately. An hour after, I came to myself, and found that I was rolled up in blankets and furs, with a jar of boiling water to my feet, while two persons, each holding a brazier of live coal, stood by, rubbing my members with all their might. For a moment I believed myself dead or in hell. The ether burned me within, the friction scarified me without. At last,

after about a quarter of an hour, the cold acknowledged itself vanquished. I broke out into a perspiration, and the physician declared that I was saved. Just in time truly: two hours more, and I would have been roasted alive. Four days after, the manager of the Porte St. Martin Theatre stood beside my bed. His theatre was in a state of health even weaker than my own, and the dying called the recovering to his aid. 'In a fortnight at latest,' exclaimed M. Harel, 'I must have a piece that will produce fifty thousand crowns at least; adding, to ensure my assent, that the feverish state in which he found me was admirably adapted for the production of an imaginative work, in consequence of the cerebral excitement which accompanied it. This reason appeared so conclusive that I began the work instantly; gave it to him in a week, in place of a fortnight; and brought a hundred thousand crowns to his exchequer, in place of fifty thousand. True, the effort nearly drove me mad. Scarcely had I recovered in some degree when I learned the death of General Lamarque, and next day was named one of the chief directors of the funeral by his family. All Paris beheld this procession, made sublime by order, respect, and patriotism. What changed this order into disorder, this respect into violence, this patriotism into rebellion? I know not, and will never know, until the day when the royalty of July, like that of Charles IX., renders up its account to God, and that of Louis XVI. its account to man. On the 9th of June I read in one of the Legitimist papers, that I had been taken with arms in my hands at the affair of St. Méry, tried by court-martial during the night, and shot next morning at three o'clock. The paragraph had such an official look about it, and the recital of my execution (which indeed I had borne with exemplary courage) was given with such detailed minuteness, all the particulars being fully authenticated, that for a moment I almost doubted my own existence. Besides, the editor appeared quite in earnest, and spoke kindly of me, for the first time in his life. It was evident, therefore, he sincerely believed that I was dead. I threw off the quilt, leaped from the bed, and ran to the glass to ascertain the fact. At the same instant my door opened, and a letter from Charles Nodier was handed me, which ran as follows:—'Dear Alexandre,—I have just read in one of the papers that you were shot this morning at three o'clock. Pray send me word if that will hinder you from coming to dine with me to-morrow.' I answered that as to my being dead or alive I had not quite made up my mind; but that in any case I would dine next day with him, as punctually as the statue of the Commandant with Don Juan. Next day it was unanimously agreed that I was not dead. Still, I had gained but little, for health had not returned: seeing which, my physician ordered me,—what physicians always order when they have nothing more to say—a tour in Switzerland. Consequently, on the 21st of July, 1832, I quitted Paris."

Wherever he alights on his journey, M. Dumas finds a story to tell, an anecdote to repeat, or a conversation to invent. He weaves in everywhere bits of history with whole tissues of romance. The reader must expect nothing more than to be amused,—and then he will be gratified. Of course, M. Dumas makes excursions about Geneva. Everybody does: but it is only the artist who can make these little rides and drives interesting to those who have never seen the places described. Let us drop in with our rattling Frenchman at Ferney.—

"The first thing you perceive before entering the château is a little chapel, with an inscription that startles one, though it consists of only three Latin words:—

'DEO EREXIT VOLTAIRE.

'The object of it evidently was to give notice to the world, that Voltaire at length had condescended to acknowledge the existence of a Supreme Being, and the world no doubt felt much gratified at the intelligence. We crossed a garden, mounted the steps of the house, and found ourselves in the ante-chamber, where the pilgrims who come to adore the god of irreligion pause to collect themselves before entering the sanctuary. Here, too, the attendant goes over his solemn assurances that nothing has been changed in the apartment, not even the arrange-

ment of the furniture, since M. de Voltaire lived there; and his oratory seldom fails to produce an effect. Nothing, in fact, can be more wonderful than the self-possession and prodigious self-importance of the man. It seems that, when a child, he was attached to the service of the great man, and consequently, has his memory stored with anecdotes concerning him sufficient to throw the excellent citizens who are his auditors into a state of beatitude. When we entered the sleeping-room, we found an entire family ranged in a circle around him, swallowing eagerly every word that fell from his mouth, as if their admiration of the philosopher extended even to the man who cleaned his shoes and powdered his *perruque*. It would be impossible to describe the scene fully; but, each time the porter uttered in his own peculiar accent the sacramental words '*M. Arout de Voltaire*,' he bowed and touched his cap, upon which the small circle, who perhaps would scarcely have uncovered before the Christ of Calvary, religiously imitated the movement. Ten minutes after, our turn came for instruction. The circle paid and departed, and the porter became our sole property. First, he walked us through the garden, from which the philosopher had truly a splendid view; showed us the covered alley in which 'the fine tragedy of Irene' was composed; then, leaving us, suddenly cut off a strip of bark from a tree and handed it to me. Fancying there was some peculiar look, or smell, or taste about it, I applied the fragment successively to my eyes, mouth, and nose. But, no: it was nothing more than part of a tree planted by Voltaire, of which every visitor is expected to carry away a memorial. The poor tree, indeed, was near meeting an untimely fate lately, and still looks rather weakly. Some sacrilegious monster entered the park by night, and carried off, not a strip, but three or four square feet of the holy bark. 'It was some fanatical worshipper of the Henriad, no doubt, perpetrated the infamous deed,' I said to the porter. 'No, monsieur,' he replied; 'I rather think it was some speculator who had received his orders from abroad.'—'Prodigious!' On leaving the garden the porter brought us to his own abode, and exhibited the stick of Voltaire, which he had religiously preserved, he said, since the death of the great man; but now, owing to the necessities of the times, he feared he must part from the precious relic, and finally ended by offering it to us for a louis. I replied it was too dear; for, eight years before, he had sold the ditto of it to a friend of mine for twenty francs."

We will pick out one other incident of travel from this lively record,—a fishing adventure in the Valais.

"At nightfall we reached Bex, and alighted at one of those pretty inns found only in Switzerland. Dinner awaited us, and the fish was so excellent that I ordered some for breakfast next morning, which led to my witnessing a mode of fishing peculiar to the Valais. No sooner had we expressed this gastronomical desire than the landlady summoned a great lad of eighteen or twenty, who seemed to hold the various offices of errand-boy, kitchen-boy, and 'boots.' He arrived half asleep, and took the order in spite of some very expressive yawns—the only protest against active service the poor devil dared offer to his mistress, when she commanded him to go instantly and fish for trout for monsieur's breakfast, indicating me with her finger. Maurice, such was the name of the victim, threw a sleepy glance at me, so full of undefined reproach, that I became quite melted at witnessing the struggle between his obedience and despair, and began—'But really, if this fishing would be inconvenient—here the face of Maurice brightened up—'if this fishing—' 'Bah,' said the mistress, interrupting me; 'it can be all done in an hour; the river is not two steps from here. Go, you idle fellow! take your lantern and knife, and make haste.' So poor Maurice resigned himself to fate with the apathy habitual to those born to serve. A lantern and knife to fish! Ah! poor Maurice had no chance of escape from that moment, for I was filled with an irresistible desire to see fish gathered like so many sticks. * * While I made my remarks, Maurice made his preparations. He took off his shoes, and rolled up all his habiliments in a tight band round his waist, giving himself thereby much the appearance of a portrait by Holbein or Albert Dürer. 'Won't you

do the same?' said he.—'Why, are you going into the water?'—'How else could I fish?' he replied; 'and if you want to see me, take off your shoes and trousers, unless you prefer walking into the water with them on. There is no accounting for taste.' And he commenced his descent of the steep and rocky ravine, at the bottom of which rolled the river where the miraculous draught of fishes was to take place. I followed, tottering over the stones, and holding on by him as if he were a stout, straight iron pole. About thirty paces we proceeded in this way, when Maurice took pity on my weakness. 'Here,' said he, 'take the lantern. I took it; upon which he seized hold of my arm under the shoulder, and, with that prodigious strength I have never met but in mountaineers, almost lifted me down the perilous descent; and, in spite of all his rancour against me, placed me safely at the bottom by the edge of the river. I put my hand in the water. It was icy cold. 'You are not going into that,' I said, 'surely?'—'Of course I am,' he replied, taking the lantern from my hand, and slipping into the river.—'But the water is like ice,' I said, drawing him back.—'Ay, it comes down from the snow up there,' he answered, not understanding what I meant.—'Then, Maurice, you shall not go into this water.'—'I thought you wanted trout for your breakfast?'—'Yes; but for a caprice of mine I will not suffer that a man—that you, Maurice—stand in this frozen water at the risk of dying in eight days of an inflammation of the chest. Come along, Maurice! come away!'—'And the mistress—what will she say?'—'Never mind; I'll make your peace.'—'But it must be done.' And Maurice put his second leg into the water.—'What do you mean?'—'Why, if you don't want the trout, another will. They all like it—the foreigners,—a horrid fish like that; nothing but bones. What taste you all have!'—'Well! what of that?'—'Why, if I don't catch it for you, I must catch it for others: that is all; and so I had better begin at once. To-morrow night maybe some of you will say at the inn, 'I'd like to taste a chamois.' A chamois! The vile black flesh! I'd as soon eat a ram; but no matter. When that's said, the mistress calls Pierre; for Pierre is the hunter, as poor Maurice is the fisher; and she says, "Pierre, I must have a chamois." He takes his gun and goes off at two o'clock in the morning; crosses the glaciers, the clefts of which might hold the whole village; climbs rocks where you might break your neck twenty times; and about four o'clock in the morning returns with his beast, until the day comes when he never returns at all.'—'How so?'—'Why, you see, Jean that was before Pierre was killed; and Joseph, that served before me, died of a cold caught fishing for trout. Still we must go on—Pierre and I.'—'But I have heard that all you mountaineers took the greatest pleasure in these exercises, and many of you passed the night on the mountain, watching to catch the chamois at the first dawn, or to fling your nets into the river.'—'Ay, true enough,' said Maurice; 'but then they hunted and fished for themselves.'—'I was silent. * * Meanwhile, Maurice, who little thought how his words had set me dreaming, was up to his waist in water, and beginning his operations after a fashion perfectly new to me. First, he plunged his lantern down to the very bottom of the stream, holding on by the long tube which kept the lamp supplied with air. In this way, a large illuminated circle was formed at the bottom of the river, into which thronged the fish, attracted like moths to the light, knocking themselves against the shining globe, and swimming round and round it. Then Maurice gently raised the lamp higher and higher, the fish following the ascension, till all reached the surface of the water, when he adroitly struck the trout on the head with the knife held in his right hand, and down they fell again, headless and bleeding, to the bottom of the stream, to the surface of which they rose once more, only to be passed inconspicuously into the bag Maurice had suspended from his neck. I was amazed. My superior intellect, of which I had felt so proud five minutes before, was outdone; for it is evident, if I had been cast the night before upon a desert island, with only trouts in a stream for food, and no instruments with me but a lantern and knife, I must inevitably have died of hunger, notwithstanding all my superior intelligence."

These translations are smooth and limpid,—

especially that of 'The Glacier Land,' executed by Mrs. Wilde. 'The Israel of the Alps' is said, on the title-page, to be translated by Mr. Hazlitt; but, as our readers know, that assurance is not in his case to be always taken in its literal sense.

Report on the Mortality of Cholera in England, 1848-49. By the Registrar-General. Printed for Her Majesty's Stationery Office. 1852.

A little more than three years ago, the Shadow of Death was seen hovering about the eastern frontiers of Europe. It came down like the Cossack from the plains of the Ukraine,—burst into Poland, ravaged Warsaw, attacked Silesia, entered Berlin and Magdeburg, dashed across the Rhine, carried Hamburg, Amsterdam, and Paris by assault, and finally appeared within the walls of London. How fear went before and desolation followed in the track of the Destroyer, is still fresh in every memory—and may be partly read by future generations in the Cholera Report. How many efforts were made at the last moment—when the enemy was already entering our gates—to oppose his progress, how active we were in the cleansing of courts, the removal of cess-pools, the fumigation of cellars, the inspection of lodging-houses, the flushing of drains, the suspension of intra mural burials, and other multiplied sanitary activities,—all this is written from week to week in the common records of that year. At length, the Pest departed, as a vampire glutted with blood, as a Cossack laden with prey:—and as soon as he was fairly gone, we seemed to forget, by a sort of fatal fatuity, that he had ever been in our homes,—or ever could return. Like thoughtless children dancing over a newly-made grave, we took no more account of the solemn warning sent to scare us out of our selfishness and apathy. The good achieved under the influence of fear was gradually lost as the fear receded. We do not speak now of the social and sanitary reforms that should have been commenced and continued as soon as breathing time was allowed us,—the purification of the Thames, the flushing of the Serpentine and of the ornamental and poisonous waters of St. James's and Regent's Parks, the cleansing of the London canals, the completion of the drainage system, the universal establishment of baths and washhouses on a large scale, and of model houses for the overcrowded populations of Westminster, Whitechapel, and St. Giles's. We refer only to the social gains then actually made that have been since squandered and flung away. Take, for example, the burial of the dead. Again and again it has been established that the graveyards of London are among the most fatal of its evils. No one doubts it:—no one pretends to doubt it. After years of agitation, the monstrous abomination of interments in the midst of streets and human dwellings was put an end to by course of law; and London rejoiced that—amidst its terrible work—the cholera had done one thing for it which science, reason and humanity had all essayed without effect. The rejoicing was premature, however. The fear gone, the old selfishness returned to take its place; and by permission of the celebrator of maypoles, Lord John Manners, the parish authorities are again piling up dead bodies in the very densest courts and alleys of London. Well, the Avenger is again on the wing, to entech us in the fact. As before, the Shadow has been seen on the frontiers of Europe. Again it has surprised Warsaw, Berlin, Magdeburg. The approach is on the same chord as in '49. Already it has passed the Rhine,—within these few hours it has entered Hamburg. How far is Hamburg from Hull! Only a few hours' sail. So, the Shadow is now hovering on our own frontier. What have we done to disarm the spectre when it comes? Almost nothing. Two medical men have been asked to watch its course. Watch its course! Why, there are millions watching its course;—every medical man in London is watching its course. Surely the hour has come for action, not watching. The watching is idle that has not action for its end. In face of the apathy of which the non-official public are beginning—most justly—to complain,

it may be well to turn to the pages of the carefully prepared Report on the mortality occasioned by the former visitation of the dreaded pest, and see the nature of the revelations which it has to make and the lessons which it may have to teach. These figures are the results of watching,—and point directly to action and its proper course.

How fearful were the ravages of this former visitation is made sadly evident by the following returns.—The deaths from cholera in England were 331 in 1838; 394 in 1839; 702 in 1840; 443 in 1841; 1,620 in 1842; and 53,293 from cholera, and 18,887 from diarrhoea, in 1849.

The epidemic broke out at Gloucester in May; in the summer it advanced rapidly. In all England cholera was fatal to 7,570 persons in July, 16,872 in August, and 20,379 in September. The mortality was highest in the thirty-sixth week of the year, when the epidemic destroyed 7,148 lives. On Wednesday, September 5, it was fatal to 1,120, and on the following day to 1,121 persons. On these two days the epidemic was at its highest point. The decline of the mortality was more rapid than its increase; while it was fatal to 20,379 persons in September, 4,654 died of it in October, 844 in November, and 163 in December.

The two epidemics of cholera in England (1831-2 and 1848-9) continued fifteen months; they began in October, spread gradually, increased, and then, as spring advanced, partially subsided. It is worthy of remark that the cholera, in both epidemics, entered England after the wheat harvest was over, at the close of the hot season, and that it was most fatal in and after the wheat harvest of the year following.

The deaths from cholera among males were 26,108, and among females 27,185; it consequently destroyed 1,077 more females than males.

The epidemic was fatal to persons of all ages. Dividing existence into three stages, the disease carried off 7,673 boys, and 7,045 girls, under 15 years of age; 14,861 men, and 15,767 women, of 15 and under 60 years of age; and 3,546 men, and 4,355 women, of the age of 60 and upwards. The deaths were thus most numerous in the middle and most active period of life. Some interesting returns are given of the duration of cases of cholera. From these we gather that the mean duration of the fatal disease among females is 2:102 days; among males 2:060 days; or 50:44 hours in females, and 49:44 hours in males. The duration of life, after well marked symptoms of a fatal attack of cholera have set in, appears to diminish as age advances. Dividing the cases into three groups, the following results are obtained:—Between the ages of 15 and 35, 50:904 hours; 35 and 55, 46:896 hours; and 55 years and upwards, 47:352 hours. The stated duration of the disease differs more than four hours, and is in excess in the first 20 years of adult age. Fatal diarrhoea is a disease of much longer duration; and it agrees with cholera in being of somewhat longer duration in females than in males, in both sexes at the age 15-35, than at ages further advanced.

We are indebted to the Medical Board of Health for many highly valuable and interesting returns and details of the progress of cholera in 1849: and we may here observe, that no city ever presented such an array of medical talent, as practised in our metropolis during the above fatal year. It has been well said, that while the epidemic lasted, the faculty—and we use the term in its most comprehensive sense—performed services which in any other field would have won the highest honours, combating the disease night and day in the most pestilential quarters, and discharging their office with so much kindness to the poor as to deserve their deepest gratitude. Yet their praiseworthy efforts were attended with singularly slight success. They were almost entirely unable to arrest the terrible disease when it had fastened on its victim. But their experience was not valueless. The strongholds of the disease were marked and examined, and data were gathered which should and might have been of signal service.

We have not space at our command to notice all the interesting features which grew out of the labours of the Medical Board; but we cannot pass over the great practical fact which the inquiry into

the mortality of cholera elicited. We allude to the influence of slight degrees of elevation. In the vast population of London this is very apparent. In the part of Lambeth parish near the level of the Thames, the cholera, in 10,000 inhabitants, destroyed 163; at Kennington, 8 feet high, 90; at Brixton, 66 feet high, 55; and at Norwood, the highest sub-district of the parish, where the inhabitants are at least 128 feet above the river, only 5 in 10,000. This was not accidental. Elevation within these moderate limits operated with the regularity of a general law, and the influence of elevation was felt all over the kingdom. Everywhere the low cities suffered.

Cholera attacked the greater part of the coal-field districts of England. Mining operations have at all times and in all places been fatal to man, chiefly in consequence of the negligent habits of the people, and the absence of the health regulations which exist in towns possessing a municipal organization. The epidemic was not generally fatal on the primary geological formations—on the granite, the Silurian, or the Devonian systems. It is worthy of notice, however, that while Herefordshire, which is on the Old Red Sandstone, escaped, Cornwall and the south of Devon on the same formation, suffered severely. Plymouth and the districts around the Sound, into which the Tamar flows, was one of the principal cholera fields.

Bad water, imperfect sewage, and uncleanness, were found, as was to be expected, prolific sources of cholera. It is but too certain that a large proportion of the water which the inhabitants of London, and particularly those south of the Thames, have no alternative but to use, is pregnant with the seeds of sickness and of death.—Well would it be if those restless and zealous philanthropists who at infinite cost and labour freight missionary ships to savage and far distant countries, were to confine their labours to washing out the plague-spots which abundantly exist in all our large towns.

LIST OF NEW BOOKS.

- Ahn's First French Progressive Reader, by Hall, 12mo. 1s. 6d. cl.
Annette, by William F. Deacon, 3 vols. post 8vo. 2s. 6d. bds.
Earpy's (G. B.) Australian Gold Colonies, new edit. 12mo. 1s. bds.
Exhibition of All Nations, 1851, Reports of the Juries, 1 vol. 21s. 2 vols. 42s. cl. gilt.
Finlayson's (Rev. J.) Collection of Anthems, 12mo. 2s. cl.
Fouquier's (C.) Passions of the Human Soul, trans. 8vo. 12s. cl.
Gill's (P.) Valleys Eboracensis—History of Eastwold, &c. 10s. 6d. cl.
Glen's (W. C.) Poor Law Statutes, 1852, 12mo. 2s. 6d. bds.
Hogg's Instructor, new series, Vol. 3, roy. 8vo. 4s. 6d. cl.
Hood's (E. P.) Common Sense, 12mo. 1s. 6d. cl.
Hood's (E. P.) Dream Land and Ghost Land, 12mo. 1s. 6d. cl.
Horford's (Rev. J.) Four Months in England, 12mo. 3s. 6d. cl.
Hugo's (V.) Napoleon the Little, cr. 8vo. 3s. 6d. swd.
Kingsley's (Rev. C.) Twenty-five Village Sermons, revised, 3s. 6d. cl.
Lamar's History of the Restoration of Monarchy in France, Vol. 3, cr. 8vo. 8s. cl.
Louise's School Days, by Mrs. May, new edit. enlarged, 6s. 8vo. 5s. Mackenzie's (W. B.) Married Life, 2nd edit. 12mo. 1s. 6d. cl.
Mills's (J. S.) Principles of Political Economy, 3rd edit. 8vo. 30s. cl.
Ruskin's Autumn Walks to the Turret, 12mo. 1s. cl.
Sallust, edit. by C. Merivale, B.D. p-st 8vo. 5s. cl.
Schmidt's (C.) One Hundred German Tales, post 8vo. 2s. cl.
Simon (T. C.) On Mission and Martyrdom of St. Peter, 8vo. 7s. cl.
Smith's (T.) Life of a Fox, 2nd edit. post 8vo. 3s. cl.
Whately's Elements of Logic, Questions on, by Forsythe, 12mo. 1s. Wrigley's Examples, &c. in Mathematics, 3rd edit. 8vo. 8s. 6d. bds.

LIBRARIES FOR THE PEOPLE.

THE men of Manchester have recently had a grand gathering in honour of education and enlightenment. In that city where industry has been so great and so successful that many honest men have believed and declared that the Golden Calf had there found a temple for its exclusive worship, that Mammon reigned paramount over all, and that great fortunes and great wretchedness grew there side by side in ranker luxuriance and in greater contrast than the world had ever before witnessed,—in that city where many believed that the spirit of economy had rendered men hard and unimaginative,—even there, the first great People's Library in England has been established. The promoters declared, that, "As it was their especial object to provide means for the mental culture and moral elevation of the artisans and workpeople who form so large and important an element of this community, it was laid down as the fundamental basis of the scheme, that it should include a free lending library,—an institution, it is believed, hitherto without example in this country." In support of the object all classes combined. Twenty-six manufacturing or merchant firms subscribed 100l. each:—making, with forty-three sub-

scriptions of less amount, a sum of 4,384l. The overseers and foremen of the neighbourhood, who have a fund for public purposes, subscribed 2,000l., and evinced the utmost interest in the undertaking.—The interest felt by the working people themselves in the matter, and some idea of the number who are sufficiently well informed to know their wants and ready to make a sacrifice for intellect's sake, are expressed in the fact, of which our readers are already informed, that a voluntary subscription set on foot yielded a sum of about 800l. as the contributions of twenty thousand persons employed in various industrial establishments, or residing in the town and its vicinity. With 12,425l. thus collected the Committee have purchased an excellent building, at an unusually cheap rate,—altered and fitted it to suit its present purpose,—and already placed upon its shelves more than 21,000 volumes of books, and provided shelving for about 7,000 more. There is room enough, without interfering with the present design and arrangement, for adding shelves to contain double or treble the number of volumes now placed upon them.

Of the books themselves more than 3,000 volumes have been presented by public departments:—literary, scientific, and religious Societies, booksellers and publishers, and private individuals. The majority of these are, of course, not books of the most expensive class,—but the list is said to include many valuable works.

The books of reference—which bear a very large proportion to the total number in the library—had mostly to be purchased; and the cost per volume has, in consequence, been higher than the average. But as the books are, nevertheless, reported to have been purchased on moderate terms, the result is important; and we find that the entire sum expended on books was 4,282l., and that the number purchased was 18,028l.:—making the average cost per volume about 4s. 7d. It must be borne in mind, that the purchases included a large number of costly books of reference, and very few indeed of the cheap ephemeral works which enter so largely into the composition of the majority of popular libraries.

The class of books purchased is a matter of such importance, that we shall give the figures as they appear in the Report of the Committee.

The Library of Circulation consists, at present, of 5,305 volumes, thus classified:—

Theology and Philosophy	169
History	1,540
Voyages and Travels	647
Legislation, Politics, and Commerce	266
Mathematical and Physical Sciences, and the Arts	394
Literature and Collective Works	3,399
Total vols.	5,305

The Library of Reference is thus analyzed:—

Theology and Philosophy	665
History—Universal	347
Ancient	224
British and American, and Biography	3,871
Foreign	631
Total	5,093

Voyages and Travels	1,614
Legislation, Politics, and Commerce	2,705
Sciences and Arts	1,310
Literature and Collective Works	4,626
Total vols.	16,013

Special attention, it will be seen, has been paid to the history of our own country; for we are told that, of the 2,187 volumes classed as History in the circulating library, above 800 treat of British history and biography.

Here we see that a library of 21,320 volumes of superior books has been got together for the sum of 4,282l. The Committee says, that "its aim has been, the formation of a truly valuable collection in certain important departments,—and in others, to be, for the present, content with what was indispensable rather than to subdivide their means in more equal proportion." There is an advantage in this. It is always well, both for individuals and institutions, to have a *forte*:—the effect is, to maintain a higher general standard than would otherwise obtain. The Manchester Committee have made History, and especially British History, their strong point; and we believe that the effect will eventually be, not to keep down, but to stimulate the growth of the other depart-

ments. They have set up their standard in the historical department;—and it will increase the demands of the students in the other divisions.

The ultimate maintenance of the Library rests with the Corporation of Manchester, as trustees for the public; and it is worth repeating here, that when, under Mr. Ewart's Act, the burgesses of Manchester were polled on the question, 3,962 voted in favour of taxing themselves for its maintenance,—and only 40 against the proposition. This Act, however, while it provides for the purchase of land, buildings, salaries, fixtures, furniture, and fuel, does not permit the application of the funds to the purchase of books. This defect will probably be remedied before long.

The Committee express their conviction that, with an adequate provision for future purchases of books, with a liberal spirit of management, and a continued interest in the prosperity of the institution on the part of those who have now successfully launched it, it cannot doubt that the Free Library will prove to be one of the most valuable and enduring benefits which have been conferred on the town and district. The lending library, they say, "will, it is hoped, be the means of carrying the best works of our best authors to the homes and firesides of the artisan and the factory worker; whilst the library of reference will afford to the readers of any class an impulse towards consecutive and thoughtful reading, and will encourage the pursuit of studies the results of which, under favourable circumstances, may extend the boundaries of human knowledge, and multiply the instruments of national civilization."

The inauguration of this novel and important institution was performed after that theatrical fashion in which the newly aroused intellect of Manchester seems especially to delight. A stage was got up for oratorical display,—and metropolitan stars were invited to come down and tell the men of Manchester what the men of Manchester meant. There is something in this love of the theatrical which would detract from our faith in the earnestness of the men of this movement were there not such facts and figures before us to confirm it. Perhaps, after all, this spirit of show and melo-drama is natural to the youth of the movement:—which has happily a mass and solidity in itself that will sustain a good deal of tinsel without substantial injury to its character for wisdom. So long as the men of Manchester do such deeds, let them call in the heralds if they so please.

Mr. Knight—one of the appointed expositors of Manchester to Manchester's self—observed:—"The promoters and friends of this institution most earnestly desire that the example now given may be followed by the establishment of similar libraries in the populous cities and towns of the United Kingdom,—and that the effect of this new feature in our social economy may be manifest in the growing intelligence and improvement of the English nation."—The difficulty of obtaining books even in London, where scarcely anything else is difficult of attainment, always strikes foreigners as inconsistent with our practical habits. The fact that there is but one important lending library in the Metropolis,—and that the subscription to this one places it entirely out of the reach of the working, and almost as much out of that of the student, class,—is an anomaly in the midst of well-supplied London. But in the history of all improvements, and especially of social improvements, the actual movement waits for some fortuitous circumstance or some active spirit, and this is especially true of London where general co-operation for such purposes is next to impossible.—Now that the impulse has arisen from without, we may do something ourselves:—now that Manchester has demonstrated the feasibility of the plan, perhaps we shall see an effort made to supply the middle and working classes of London with good general libraries for reference and circulation. What should hinder the execution of such a project? Such a library is one of the cheapest and most useful institutions that could be established. For 5,000*l.* such a collection of books could be got together as few individuals, or even institutions, possess. One floor in a good-sized house would suffice, if necessary, for a commencement.—The expenses of

management need not be extravagant:—and there is this difference between a library and any other means of education, that while these require professors and masters, and in some cases must wait while a large number of teachers are educated before their influence can extend to the mass of the community, a collection of books is a college of teachers who act whenever called on, without fee or reward, and are ready to supply exactly that sort of knowledge which appeals to the largest numbers.

The Reports of the Committee of Inquiry into the subject of Public Libraries contain evidence which ought to have caused us to set to work long since; and the condition of America in this respect has long served as a reproach to us for not accepting a lesson which has been frequently and forcibly brought before us.

Our attention has been especially turned to this subject of late; and we think we shall be doing good service in making public the following facts relating to the Public Libraries in the United States,—which we have derived from official documents and private communications. The publication from which we have obtained the greater part of our information is, a Report on the Public Libraries of America by the Librarian of the Smithsonian Institute of Washington; and being the first report of the kind that has been drawn up, its information is exceedingly interesting.

In the preliminary remarks, Mr. Jewett, after speaking of the great value of private libraries, as being often perfect collections of the books appertaining to that department of Art which the collectors have made their especial study, says—"In this country a narrow and exclusive spirit among book collectors is almost unknown. Gathering for use, and with an appreciating spirit, they are not disposed to debar others from the treasures which they possess. The liberality of proprietors of large collections of books in this country is remarkable, and I believe unparalleled." And referring to the definition of a Public Library, he says—"I mean by it libraries which are accessible—either without restriction, or upon conditions with which all can easily comply,—to every person who wishes to use them for their appropriate purposes. In this sense, I believe it may be said that all libraries in this country, which are not private property (and indeed many which are private property) are public libraries."

By a "Tabular View of Public Libraries in the United States," contained in the Report alluded to, we find that there are, at least, 10,199 Public Libraries, containing 3,753,964 volumes. These libraries are distributed under the following heads:

	vols.
State Libraries	39 containing 298,937
Social Libraries	126 " 611,334
College Libraries	126 " 586,912
Students' Libraries	142 " 254,639
Libraries of Academies and Professional Schools	227 " 320,509
Libraries of Scientific and Historical Societies	34 " 138,991
Public School Libraries	9,505 " 1,532,332
Total Libraries	10,199 Total vols. 3,753,964

Of the 694 libraries contained in the above list, and not appertaining to public schools, the library of the Harvard College is the largest. It contains more than eighty-four thousand volumes. The size of these libraries is exhibited as follows:—

Harvard University:	vols.
Public Library	56,000
Law Library	14,000
Theological Library	3,000
Medical Library	1,200
Students' Libraries	10,000
Total	84,200
The Philadelphia and Logonian Library	60,000
Yale College:	
College Library	30,515
Medical Library	900
Law Library	1,900
Students' Library	27,166
Total	50,481
Library of Congress	50,000
Boston Athenæum	50,000

Besides these there are:—

11 Libraries, containing from 20,000 to 50,000 vols.	
43 " " " 10,000 to 20,000 "	
175 " " " 5,000 to 10,000 "	
198 " " " 1,000 to 5,000 "	
271 " " less than 1,000 "	

The States of New York, Massachusetts, Michigan, Mississippi, and Pennsylvania stand pre-eminent for the number of their libraries. New York has upwards of eight thousand school libraries, and more than 200 other public libraries of various denominations. Massachusetts has 700 school, and 62 other public libraries. Michigan has 374 of the former, and 7 of the latter:—while even the State of Iowa can boast of its 2,660, Wisconsin of its 7,163, and Minnesota of its 3,200 volumes of books for public use.

There are, in the words of a gentleman of Philadelphia, "circulating libraries in nearly all the large towns of the United States, on the stock company principle. In Philadelphia, for instance, there are several,—the Philadelphia Library and the Mercantile being the principal. The former contains 60,000 volumes, the latter 10,000. The shares of the Philadelphia Library sell in the market for 20 dollars; the Mercantile for 6 dollars. Each stockholder in the Philadelphia pays 4 dollars a year for the support of the library; and each in the Mercantile 2 dollars. There are about 900 stockholders to each institution. The former is open from 10 A.M. till sunset, and any non-stockholder is allowed to consult works of reference, and even to take them home, on making a deposit and paying 12½ cents a week. The Mercantile is open from 3 P.M. till 10 P.M., and is frequented principally by young clerks, mechanics, &c., who use it both as a reading-room and a circulating library." The Philadelphia Library, as we find by an extract from *Waldie's Portfolio*, by Mr. John Jay Smith, the librarian, was set on foot by Benjamin Franklin, in conjunction with eight or nine other friends of education. The shares were forty shillings each; and after an immense deal of trouble and vexation, about half the fifty subscribed shares were paid up, and it was resolved to send the proceeds to England to be invested in the purchase of books. Accordingly, "to expedite the affair," Robert Grace agreed to draw on Peter Collinson, mercer, in Gracious Street, London, for 45*l.* sterling, at 65 per cent. advance, the current rate, in favour of, and to be remitted by, Thomas Hopkinson, then about sailing for England, with directions to purchase as many books as he could for the money. The first list of books was drawn up by Mr. James Logan, the secretary and friend of William Penn,—whose own valuable collection of books was eventually incorporated with the Philadelphia Library.

The first lot of books arrived in October, 1732; and their importance may be estimated from the fact, that at that time "Government made no provision whatever for public education; nor was there so much as a good bookseller's shop nearer than Boston." "The books were taken to Mr. Robert Grace's chamber, at his house in Jones's Alley, and there placed on the shelves; and Louis Timothee, the librarian, was to attend from two to three on Wednesdays, and from ten till four on Saturdays." He was allowed by the rules to permit "any civil gentleman to peruse the books in the library-room, but not to lend them out to any but the members." For this service Mr. Louis Timothee was to receive at the expiration of three months "three pounds lawful money certain, and such further reasonable reward as should be agreed on in consideration of services." Thus was originated one of the largest and best of the American Public Libraries.—The catalogue and other necessary matters were printed gratuitously by Benjamin Franklin; who also, on the resignation of Timothee some time later, filled the office of librarian himself, for "three months and a day."

These libraries are composed of useful books, and are freely opened to, and well used by, the people. The "Philadelphia Mercantile Library" contains 7,000 volumes, and circulates that number four times over in each year. We have not before us the circulation of many of the libraries, but the statements generally show that there is not much chance of the dust accumulating on the books.

As an instance of the effect which the apprentice libraries must have upon the rising population, we may mention that the Apprentices' Library of Philadelphia has 11,370 volumes upon its shelves, constantly accessible to apprentices (and others in

want of its benefits) of both sexes; and that, too, upon the most liberal terms, being subject to no other than the single and easy condition, that the book borrowed shall be returned. We find by the official reports that in the year 1849, 21,279 books were lent to boys and 13,129 to girls:—making an aggregate of 34,408 volumes circulated during the year. During the three years previous to the above date the annual increase in the number of books was about 900 volumes; while the gross income of the institution is only about 200*l.* a year. The library is reported as being used regularly by about 800 boys and 250 girls.

We have dwelt at some length on the facts connected with the supply of books to the American people, because we believe that they will furnish the best argument for the establishment of similar sources of information in this city, and in all parts of the kingdom. The idea that the population of this country are not ready to avail themselves of such resources, is as fallacious and as unjust as were the opinions that so long excluded the English people from the graceful influences of works of Art. The experiment has been tried in this latter case,—and the result has been most triumphant. Those who pass by thousands amongst the wonders of nature and art in the British Museum, in the National Gallery, or at Hampton Court,—and who last year obtained from the world the character of being the best conducted people on the face of the earth,—would, if libraries were as accessible as other institutions have lately been, devour the one food with all the eagerness and good digestion which they have brought to the other.

MR. G. R. PORTER.

Mr. George Richardson Porter, one of the Joint-Secretaries of the Board of Trade,—but better and more honourably known to the readers of the *Athenæum* by his work entitled 'The Progress of the Nation,'—died at Tunbridge Wells, on the 3rd inst., in, as we believe, the sixtieth year of his age. He was originally a sugar-broker in the City of London,—not engaged in any extensive dealings, but with a business thought by many at the time to be, in City language, "a lucrative concern." This, however, it proved not to be. Like many other excellent political economists, Mr. Porter was better adapted for statistical tables and advising others than for the transaction of business for himself. It was not long, therefore, ere "the sugar-broker" became a bankrupt. In his depressed state, his better faculties were called into play:—and, like many other insolvent tradesmen in former times, he took to authorship as a profession.

One of Mr. Porter's first essays in the way of authorship was, an anonymous article on Life Assurance, written for 'The Companion to the Almanac.' By this article, he was, we are told, first introduced to Mr. Charles Knight;—and it was not long before the publisher was enabled to do his author a good turn. Mr. Knight (we believe we are not violating confidence) was written to by the late Lord Auckland, then the President of the Board of Trade, requesting that he would wait on that minister at his office at his earliest convenience,—and on a matter of some moment. Mr. Knight waited as promptly on his Lordship as his predecessor old Jacob Tonson would have waited on Sir Robert Walpole for the printing of Sacheverel's or Atterbury's trial. Lord Auckland, at the interview, asked Mr. Knight if he were willing to undertake the task of arranging and digesting for the Board the mass of information contained in Blue Books and Parliamentary Returns:—in short, if he would do for the Board of Trade what Mr. Porter has since done so well, and what Mr. Fonblanque continues to do for the same office with the same accuracy and success. Mr. Knight hesitated. This engagement, should he accept it, must necessarily interfere in a great measure with his business as a publisher. In this dilemma, he consulted a distinguished friend,—and by that friend was advised to wait on Lord Auckland and decline the office. This he did:—and the propriety of Lord Auckland's confidence in Mr. Knight was shown by the wise recommendation which, at his

Lordship's request, he made of a person fit for the new office. Mr. Knight named Mr. Porter:—and to him the office was given.

Mr. Porter continued to fill the important office of Superintendent of the Statistical Department in the Board of Trade until the resignation by Mr. Macgregor of his office as one of the Joint-Assistants, or Permanent, Secretaries of the Board. This was in 1847; when Mr. Porter, much to the satisfaction of every civil officer of the Crown, and more to the credit of the Government, was selected to fulfil the onerous duties of that office.

It has been a wonder to many that Adam Smith should find books or information enough in "the long town of Kirkcaldy" to enable him to write in so desolate a retreat his 'Wealth of Nations,'—and equally has it been a wonder to others that Mr. McCulloch should, with his many duties as Comptroller of the Stationery Office, find time to compile his 'Commercial Dictionary,' or that Mr. Porter amidst his engrossing engagements at the Board of Trade should have the leisure or inclination to compile his 'Progress of the Nation.' The wonder is in each case without foundation. Adam Smith's great work was the careful digest in Kirkcaldy of his long and patient reading in Edinburgh. To Mr. McCulloch we may apply the sounder observation, that the busiest man has often the most leisure hours:—while as far as Mr. Porter is concerned, it is obvious that the office which he held in the Board of Trade was the best preparative and the continuous provocation to his great work.

It may be doubted whether Mr. Porter's reputation will be sustained at its high point hereafter. His book has rather a contemporary than a permanent value. New "Present States" will be required in Mr. Porter's case,—as new "Present States" were constantly required in Chamberlayne's. But his work will be, beyond all doubt, of value to some future Macaulay on the reign of Queen Victoria,—and future political economists may and will draw deductions from its tables favourable or unfavourable as they may wish them to be. 'The Progress of the Nation' is in many respects a remarkable work. Without the sagacity or philosophy of Adam Smith, or the wide-spread information of Mr. McCulloch,—it has excellencies of its own such as future writers on similar subjects may well be proud to gather even at secondhand.

Mr. Porter was married to a daughter of Mr. Ricardo,—lived at Wimbledon,—and was buried where he died, at Tunbridge Wells. The immediate cause of his death was, a gnat's sting on his knee,—which produced mortification. His sedentary habits had led to a bad state of blood:—so that, he was ripe for death from apparently so small a casualty as the sting of a gnat.

AUTOBIOGRAPHY OF BERZELIUS.

SOME four years ago we were agreeably surprised in Edinburgh by learning that the great Swedish chemist Berzelius had left behind him a full and exceedingly interesting biography. Letters from Stockholm announced that it was ready for the press, and propositions were made to a well-known publisher,—who hesitated to accept them only because the law of copyright in translations was so unsatisfactory. In these circumstances, I urged upon the parties concerned the probability of the Cavendish Society undertaking the publication of a work which could not fail to be welcome to students of the physical sciences and to men of letters in general; and I anxiously looked for the appearance of the Autobiography in the original Swedish, or in the form of a German or French translation. But for more than three years no tidings have reached me regarding the work. Within the last few weeks, however, I have ascertained from an accomplished Swede why the Autobiography of Berzelius has not been published:—and as its publication will be indefinitely delayed unless some steps are taken to hasten it, I have to request space sufficient in your columns to explain the present position of matters, in reference to the work in question, and to solicit your good services in keeping the subject before the scientific public.

The cause of non-publication is one peculiarly and provokingly unsatisfactory. The Autobiography, it appears, contains so many personal allu-

sions to living, or recently deceased, scientific men, that the executors of Berzelius are afraid to publish it. They are even debarred from this by the laws of Sweden—which forbid works dealing in personalities to appear till the lapse of many (I think sixty) years after the death of their writers. My informant thought it possible that at the end of ten or a dozen years the Autobiography might appear,—but this was uncertain. In the hope that it may contribute to abridge this delay, I would urge the justice and expediency of publishing the work immediately. In urging this, I assume that the Autobiography is worthy of publication. If it is not, it will not acquire worth by gathering dust for half a century. Those who have read it in manuscript speak in the highest terms of its interest; nor will any one acquainted with the character of Berzelius suppose that the record of his life will favour immortality, or that he is likely to have spent his old age in chronicling vulgar gossip, scandal, and tittle-tattle. The truth is, that the great Swedish chemist was a keen and often unsparing critic of his contemporaries, and as their peer passed judgment upon the most distinguished of his fellow-philosophers. These judgments, which are understood to abound in the Autobiography, are believed to be severe—often sarcastic, but never deliberately untruthful, malicious or malignant. It is the dread of these estimates of character giving offence, that has led to the temporary suppression of the work containing them:—yet surely, none have so great an interest in the immediate publication of the Autobiography as those, and the intimate friends of those, who are judged in it. It implies a mistaken regard for their feelings, and can do no honour to their memories, to wait till they are silent in their graves before producing charges against them to which whilst in life they might easily have replied. In illustration of this, I may notice the case of two of our countrymen who are certain to be referred to in the Autobiography—Sir Humphry Davy and Dr. Thomas Thomson. Berzelius made no secret of his dislike of Davy, whose manners greatly displeased and offended him. He freely complained to his more favoured pupils of Sir Humphry's behaviour; and some of the Swedish chemist's friends have anticipated the probable revelations of the Autobiography on this head. Without referring to what has reached me through private channels, I would direct the attention of your readers to what Mulder, of Utrecht, has published respecting Berzelius and Davy, in his biographical sketch of the former,—of which a translation (from the original Dutch) was expected to appear from the pen of Dr. Voelcker, of Cirencester;—and likewise to what appears on the same subject in H. Rose's biography of Berzelius read to the Berlin Academy, and about to be published in an English dress in the *Edinburgh Philosophical Journal*. From all that has transpired, it may be safely inferred that Sir Humphry Davy will figure prominently in the suppressed Autobiography. He was too early taken from us, but his accomplished brother lives to defend his memory; and all lovers of justice must wish that Dr. Davy should have the opportunity of answering, if he should think proper, the criticisms of Berzelius upon Sir Humphry.

Dr. Thomas Thomson and Berzelius carried on a keen controversy during several years, and both were hard hitters. The former, accordingly, is certain of a place in the Autobiography. Had it been published three or four years ago, the venerable Scottish chemist, whose death is so recent, would probably have favoured us with a page of interesting counter-autobiography, now lost for ever to the records of literature. His accomplished son and nephew, Drs. Thomas and R. D. Thomson, however ready to defend the memory of their relative, may not be in the way, or have it in their power to do so, if the publication of the Autobiography is delayed for years. How many other scientific men will be deprived of the power of giving their version of a disputed question, by a protracted delay in publication, can only be surmised,—but the number must be great.

There can be no question, then, as to the desirableness of an early appearance of the Auto-

biography. The Swedish law which restricts publication, is levelled, I presume, at libellous matter, and has regard to the rights only of Swedish subjects. It seems not impossible to comply with the requirements of the law, and yet to hasten the publication. If necessary, all that refers to the countrymen of Berzelius might for the time be omitted; and only his judgments on English, French, German, and other foreign philosophers be published. It is not likely that the friends of Davy, Thomson, or Liebig would prosecute the publishers of the *Autobiography* for libel in a Swedish court of law. Our men of science are not so very thin-skinned as to summon the appliances of law to defend them against even the freest and most outspoken judgments of a great philosopher. Surely where the critic is dead and can add nothing to his judgment, the subject of his criticism who is living and is certain of the "last word" may justify himself through the ordinary literary channels without invoking the vengeance of a court of justice upon the representatives of the dead.

I write this in the hope that some of your scientific readers who are specially acquainted with the Professors at Stockholm will use their influence to accelerate the publication of the "Life of Berzelius." The Swedish law, though nominally stringent, was not, I believe, intended to restrict the publication of such works; and the obstacle which it puts in the way of the appearance of the *Autobiography*, I am given to understand, might be overcome. If the work were edited by some discreet friend of Berzelius, such as Prof. M. Retzius of Stockholm, it is not likely that any one would be greatly wronged or offended by its publication, whilst multitudes would welcome it as an invaluable addition to our scientific literature.

I am, &c. GEORGE WILSON.

Edinburgh, 24, Brown-square.

OUR WEEKLY GOSSIP.

THE more than ordinary dearth which prevails, and has for some time prevailed, in the field of literary production must have struck our readers through the report of every medium by which the state of the literary market is reflected. The barrenness at home has driven ourselves to look abroad for books,—only to find the greater barrenness there. Such importations as we have been enabled to make thence for our hungry columns, are, besides, of a literary grain somewhat heavy, and ill adapted to ordinary digestion. Under these circumstances, it is pleasant to know that the prospects of the coming season are best at home. The English harvest is fast ripening—and looks well; but abroad, the literary crop continues to fail everywhere. All the conditions of a wholesome growth are wanting in most of the countries of the Continent:—moral sunshine, the air of free thought, and the unimpeded fall of the intellectual showers. The sort of irrigation which the soil does receive is too hot for its good—and wants the properties which make men wise. For one hour more in the world's history the book of knowledge is pretty generally closed; but not before the lessons had read deeply therein, and learned the lessons which shall teach them how surely to open it again. Meantime, the hearts and intellects of many are looking from the literary starvation abroad to the corn that is yet growing in the glorious sunshine of our free Egypt;—and for their sakes, as well as for those of our own readers, we rejoice that the unnatural scarcity of the past weeks seems likely ere long to be abundantly relieved.

The Edinburgh papers announce the death of Dr. William Macgillivray, Professor of Natural History, and Lecturer on Botany, in Marischal College and University, Aberdeen:—the concluding volumes of whose "History of British Birds" lie now on our table for review. The Doctor would seem to have lived on, sustained by the work which he had in hand,—and died at once when it was accomplished. Turning to the concluding sentences of the "History," we find in this last literary message to the living some affecting words. The Doctor is evidently winding up his literary accounts for death,—which he speaks of as "before his eyes." There is in his parting address a sort of triumphant

tone that a work "of which he had scarce hoped to see the completion" is finished—saddened by the knowledge that it is finished *only* in time.

A Correspondent reminds us in reference to our remarks [*ante*, p. 909] on the absence of any English edition of the collected works of the late Mr. Winthrop Mackworth Praed, that Mr. J. W. Parker years since announced such a work as in preparation, to be edited by his widow, and accompanied by a memoir from the pens of the Rev. J. Moultrie and D. Coleridge. "I have reason to believe," he says, "that more than one individual abandoned the intention of collecting some at least of the numerous graceful effusions of Praed upon hearing that a complete edition would before long be presented to the public. I am induced to write this hasty note in the hope that if you give it insertion in your journal, it may meet the eye of one or other of the two gentlemen who were to act the part of editors;—and I feel sure that in that case the readers of the *Athenæum* will ascertain whether or not they may expect from them a complete edition of the remains of Winthrop Praed."

Another Correspondent suggests that "it would be an improvement in the arrangement for readers at the British Museum Library if the tables were numbered, and every reader were required to put the number of the table at which he is sitting on his book ticket."—"He has," he says, "frequently had to wait an hour for a book solely because he could not be found by the assistant."—"My wonder," he adds, "is, that these really hard-worked persons manage to find as many readers as they do. With the above arrangement a great deal of labour would be saved to them, and much time to those who take advantage of the library."

A most important alteration has been made by the Congress of the United States in the postage charges on newspapers and other publications. An Act has been passed which declares that on and after the 13th of the present month of September, newspapers, periodicals, and all printed matter not exceeding three ounces in weight, may be sent by post to any part of the United States for one cent,—or about a halfpenny; each additional ounce to be charged one cent. If the postage be paid in advance, quarterly or regularly, either at the office where the papers are mailed or at that where they are delivered, one-half of the above rates only to be charged,—and the same in the case of newspapers not weighing more than one ounce and a half, when circulated in the State in which they are published. Packets of small newspapers published monthly or oftener, to be charged half a cent per ounce. All postages to be prepaid or charged double. Books, bound or unbound, not weighing more than four pounds, to be charged one cent per ounce under 3,000 miles; for greater distances, double that sum, provided they are prepaid, if not, the charge to be increased 50 per cent. A curious clause directs that "all printed matter chargeable by weight shall be weighed when dry." Permission is given by the new Act to publishers of newspapers and periodicals to send to each other, *free of postage*, one copy of each publication, and also to send to each actual subscriber, enclosed in their publications, bills and receipts for the same, free of extra postage.—These reductions and arrangements show an earnest desire on the part of the legislature to afford every facility to the diffusion of information; but the enactments are wanting in uniformity and simplicity,—points of immense importance to the public as well as to the post-office. The spirit evinced in the promulgation of this Act will doubtless soon remedy any defects that may be found to exist when it comes into practical operation; and its exhibition at the present moment argues well for the progress of the movement now being made in this country towards a system of cheap and uniform international postage.

We understand that it is in contemplation to erect a magnetic telegraph—like that at Charing Cross—on a prominent point of the South Foreland, to be connected with the Greenwich Observatory. A time-ball, falling as many feet as the one in London, could be seen on the South Foreland by all vessels, in good weather, within ten miles—including the Downs, with Deal, Dover and Folkestone.

M. Secchi, Director of the Observatory of the Roman College, announces that on the morning of the 26th of August he discovered, in the constellation Gemini, a very small comet,—“probably that announced by Biela, though its position is very different to day.”

The ordinary telegraphs from the Hague announce that France has recalled her ambassador from that capital in consequence of the recent rejection of the copyright convention. Our readers will remember that a proposal, similar to that made in Brussels, was laid before the King of Holland—and the Dutch Chambers rejected it as likely to interfere with a profitable branch of the national industry. We shall see whether the piracy party in the Chamber will give way before this energetic policy.

The Parisians have their battle of the books as well as the Londoners. M. Taschereau, whose appointment to superintend the execution of the Catalogue of the *Bibliothèque Nationale* was stated in our columns a year ago, has just made a Report, in which he shows that by the system which he found at work when entering on his present duties, the Catalogue never could have been made complete,—for the very good reason that new books came in faster than the old ones were entered. He has consequently proposed various changes in the system, some of which—reasonable as they may appear to third parties—have been received with a sort of ludicrous horror by the class official, and the clerks and scribes of the library look on M. Taschereau as little better than a revolutionist. For example, he thinks that for the future it may be considered as unnecessary to enter in the general Catalogue these several orders of printed works:—1. Bills of fare of restaurateurs, and lists of prices of furnished lodgings.—2. Prices current of perfumery.—3. Prospectuses and advertisements of long-life lozenges, syrups, and quack medicines.—4. Government printed forms and speeches made in any public assembly by functionaries and persons of distinction.—He also thinks that legible caligraphy is all that is necessary, and that time need not be lost in imitating curious print with the accuracy of a fancy writing-master. M. Taschereau states in his Report, that he has invented a system of making a Catalogue of new works as they come in. He promises, with government support, to finish the Catalogue within ten years, and without exceeding the original estimates of expenditure. He expects that the complete Catalogues of the three important heads of 'History of England,' 'History of France,' and 'Medicine' may be ready for the printer within a few months.—If M. Taschereau shall be found to redeem his promises, it may become worth the trouble of a run to Paris to see in what his plans of acceleration consist.

Another well-known journalist, M. Antenor Joly, has just died at Paris. He was founder of the *Vert-Vert*, a paper which had a great success in its day,—and was the director of the *Théâtre de la Renaissance*, where *Ruy Blas* and *L'Eau Merveilleuse* were first produced.

From Berne, we hear of the death of M. A. Mieville, called by his countrymen "the Nestor of Swiss journalism." He was the founder of the *Gazette de Lausanne*; and although blind during the last fifteen years of his life, he occupied himself with the public business, in which he had taken a prominent share for half a century, to the last. He was in his eighty-sixth year.

"You may be interested," says a Correspondent, "to hear that Kohl, the traveller and author, is diligently engaged in preparing a work on the geographical discovery of America. He has made a most voluminous collection of maps chiefly traced by himself, and this from good authorities; and his MS.—which already extends to several hundred folio pages—promises to yield matter for many quarto volumes.—Mr. Motley, an American to whom I was introduced, has been residing at Dresden in order to avail himself of the Royal Library, peculiarly rich, he states, in the history of the Netherlands,—which he purposes writing.—Your German-loving readers will be pleased to hear that Auerbach has gone into the wilds of Wurtemberg, his native country, to col-

lost fresh village tales and traditions,—which he intends publishing on his return to Dresden. He need not have gone so far for superstition, if the librarian of the Royal Library at Dresden is to be credited. Among the MS. treasures in that fine collection is, the conjuring-book of Dr. Faustus—a most curious volume filled with strange devices and extraordinary words. The peasantry in Saxony, and particularly those inhabiting the romantic district of Saxon Switzerland, the abiding place of innumerable gnomes and kobolds, are aware of the existence of this singular book; and on more than one occasion the librarian, as he assured me, has been applied to for permission to copy on parchment one or more of the cabalistic signs or sentences,—the wearing of which, it is firmly believed, would preserve the fortunate possessor from all evil."

We hear that the German historian Professor Baake is engaged in writing a work on French history in the seventeenth century;—and that he is now in Brussels, consulting the rich historical archives of that city, for the purpose.

A congress of German stenographers has just been held at Munich which was attended by sixty members of the profession.—One of the members, M. Baumgartner, of Vienna, described a system of musical stenography invented by him, by means of which, as he said, the most complicated musical compositions can be written down during their execution. Trials of the system were made in presence of the members and of many musical artists,—and they are said to have succeeded perfectly.

The Lake of Haarlem—that interesting inland sea, which burst through the dykes of sand and willows, and swallowed up some of the richest meadows of North Holland, more than three centuries ago—has been nearly expelled from the territories on which it had seized in spite of Dutchman and Spaniard. In the year 1539, while the people of the district were groaning under the oppression which afterwards drove them into the insurrection now considered one of the noblest up-risings of the world,—the North Sea broke over the artificial dam and the triple ridges of sand formed by the action of wind and tide on that stormy coast, and showed the inhabitants how to isolate their cities and cut off a besieging enemy:—a lesson afterwards turned to effective account by them at Leyden and elsewhere.

But the invasion of the water brought horror and desolation into the fertile flats of North Holland. Twenty-six thousand acres of rich pasture land, with meadows, cattle and gardens, were covered by the waves which would not ebb:—and the village of Nieuweinkirk was submerged and all its inhabitants were lost in the tremendous calamity. More than two centuries elapsed before any one began to dream of recovering this vast estate; and then, although the lake was only six feet in depth, the recovery was long believed to be impracticable. Again and again the project has been started since the present century came in. In 1819 a scheme was submitted to the King for the drainage, and approved,—but it led to no result. Even as late as the session of 1838 a motion for the same purpose was rejected by an immense majority in the Dutch House of Representatives.

But as the engineering science of the age grew more daring and confident, even Dutch phlegm gave way, and the works were, as our readers are aware, commenced. They have been long in progress,—and it is now reported that the task is near its final accomplishment. The remains of the unhappy village of Nieuweinkirk have been found, with a mass of human bones, on the very spot where the old charts of the province fixed its site. In a few more weeks it is believed that the Lake of Haarlem, famous for its fishing and its pleasure excursions, will have become mere matter of record.

Some months ago, our readers will remember, that a scientific Expedition was sent out from Copenhagen to explore the hills of Greenland and report on their mineral resources. This Expedition has just returned to Denmark, with a cargo of minerals as the fruits of its industry. The explorers have failed to find any of the more precious metals; but they have brought back iron, lead, nickel, tin, and copper mixed with a little silver:—the whole

valued at nearly two thousand pounds. The society appears to be encouraged by these first-fruits of its enterprise to renewed exertions; but the rigours of the climate of Greenland deter even Norwegian miners from embarking in the adventure.

The American Lake papers give some particulars of the railway bridge which is to span the Niagara, and connect Canada with the United States. At first thought the idea of a railway train dashing high in air over that renowned water is rather impressive; but when the actual details are mastered, the undertaking falls down into the second class of engineering enterprises. The bridge will be in a single span 800 feet long; less than half the length of Telford's carriage-road across the Straits, and 1,049 feet shorter than the Britannia tube. It will form a straight hollow beam, of 20 feet wide and 17 deep, composed of top, bottom and sides. The upper floor, which supports the railroad, is 24 feet wide between the railings, and suspended to two wire cables, assisted by stays. The anchorage will be formed by sinking eight shafts into the rock, 25 feet deep. The towers are to be 60 feet high, 15 feet square at the base, and eight at the top. The bridge itself will be raised 18 feet on the Canadian and 28 feet on the American side above the present banks; and it will be an imposing object from some points, though it will nowhere strike the spectator with the same awe as the great work of Stephenson.

THE GOLD FIELDS OF AUSTRALIA.—This NEW MOVING PANORAMA, Painted by J. S. Proctor, from his sketches made upon the spot, is EXHIBITED daily at 209, Regent Street, next the Polytechnic. Among the principal Scenes are—Plymouth Sound—Madras—Cape of Good Hope—South Sea Whale Fishing—Melbourne—Guelph—The Road to the Digging—Mount Alexander—Sydney—The Blue Mountains—Summerhill Creek—Ophir—Encampment of Gold Diggers by Moonlight. It being desirable that the Scenes should be described by one personally acquainted with the Colony, Mr. Proctor has, for a short time, undertaken that office.—Admission, 1s.; Reserved Seats, 2s.; Gallery, 6d. At Three and Eight o'clock.

PATRON—H.R.H. PRINCE ALBERT.
ROYAL POLYTECHNIC INSTITUTION.—LECTURES:—By J. H. Pepper, Esq., on TESTING GOLD, and on the AUSTRALIAN GOLD DISTRICTS.—By Dr. Boehmhauser, on the PATENT POLYTECHNIC GLASS PROCESS, and on the ART OF PRESERVING FRESH PROVISIONS, illustrated by Specimens from Messrs. Ritchie and McCall, and Samples of Fadiu's Solidified Preserved Milk and Moore's Patent Concentrated Milk.—By Mr. Crisp, on MORRILL'S PATENT NEEDLES.—By George Buckland, Esq., on MUSIC, entitled MUSICAL VARIETIES, with Vocal Illustrations, assisted by Miss Blanche Young, R.A. of Music.—NEW SERIES OF DISSOLVING VIEWS, &c. &c.—Admission, 1s.; Schools and Children under ten years of age, Half-price. For hours see Programme.

FINE ARTS

FINE-ART GOSSIP.—Two years ago an effort was made by a number of strenuous Etonians to put the College—then much worn and wasted by time—into a state of decent repair. More than 8,000*l.* was collected; and the chapel—so far as the choir was concerned—then underwent a thorough repair. But the ante-chapel remained in its pristine state, looking all the more ragged from contrast with the finery of the choir. It is now said that the college authorities have resolved to complete the work by an outlay of between 2,000*l.* and 3,000*l.* in cleaning, repairing, and re-arranging the ante-chapel. The work has already commenced,—and is expected to be finished by Christmas. All the monuments in this part of the edifice have been removed from the walls, and with the exception of those of the founder and Dr. Goodall they will be placed on the walls of the west entrance. The walls are to be re-faced with Bath stone, and new tracery panneling will be introduced along the whole of the west side; also new moulded purlins, cornices, and new moulding along the sides of arched principals, with carved angle ornaments to correspond with the new roofing of the choir; the arched beams and all the timbers of the roof to be coloured; the stone floor to be taken up and re-worked and fixed. The work has been intrusted to Mr. Ratter, of Cambridge. The old organ has just been taken away, and a new one placed in the choir.

The Museum of Ornamental Art at Marlborough House opened to the public last Monday.—On Monday and Tuesday, which were free days to the public, the visitors averaged above one thousand persons each day.—On Wednesday, Thursday, and Friday, when the novel experiment commenced of

testing, by a fee of 6*d.*, whether the applicants really desired to study or not, the students who paid averaged above eighty daily. Several at once exercised their privilege of taking notes and drawing from the objects.—On the free days, the crowds made study impossible.

Although the structure is not quite completed, the removal of the scaffolding enables us to judge of the exterior of the new insurance-office at the corner of Gresham Street and King Street, Cheap-side:—to each of which it presents a front of some extent. It is a handsome and rather striking piece of architecture; more than usually ornate and what may be called decorated in its general character, although of positive ornament there is little. We perceive in it a great improvement on the dry—and we may call it feeble—mannerism which shows itself in buildings of the same class erected between ten and twenty years ago. Except that on the north side, or towards Gresham Street, there are six windows on a floor, and on the west only five, the elevations are alike, or very nearly so; and at the angle between them, which is curved off, the entrance is placed,—and over it a triple window, with a projecting stone balcony on the first floor. Although "order," properly speaking, there is none, the composition being *astylar* (with three tiers of windows above the ground-floor, and crowned by a *cornicione*), there are attached Doric columns below from which spring segmental arches of very slight curvature,—not, indeed, immediately from the capitals of the columns, but a little higher up, so that they may be described as "stilted" arches. The first floor has what are called by some "Bramante windows";—that is, arched apertures in a square-headed "chambrante," or dressings,—and in this instance crowned by pediments. It is evident, therefore, that the architect—as to whose name we are unable to speak positively—sets Ruskin at defiance; his design being, not indeed copied from, but founded on the "base," the "detestable" Renaissance style. The capability, however, and applicability to modern requirements of this, it shows very satisfactorily and convincingly.

A Correspondent who has been travelling in Germany writes to us as follows.—The New Museum at Berlin is progressing rapidly. In a few months it will be ready to receive the famous historical collection in the "Kunst Kammer"—which will then be seen to great advantage. This New Museum, with its gorgeous though appropriate decoration, is undoubtedly one of the finest buildings—perhaps the finest—as an interior in Europe. Our British Museum, with its varnished granite, can bear no comparison with it.—I visited Kiss's studio—and found him working on a small equestrian group of great merit.—At Dresden, the New Picture Gallery is also advancing fast towards completion. This new site for the famous collection will be a great boon for the Dresdeners, as the present gallery is closed during the winter months in consequence of the want of arrangements to warm the rooms.

MUSIC AND THE DRAMA

NOTES ON THE FESTIVALS.

THE high character always maintained by the Birmingham Festival, and the interest excited by its performances, have once again spurred the gentlemen of that rich and busy town to provide the best entertainment attainable for their triennial music meeting. This year, it is true, it has been impossible to produce any novelty of commanding importance for the morning performances. A new oratorio, indeed, is more difficult to obtain than a new opera; and the Birmingham Committee, wisely or not, on system deal sparingly with any thing of inferior or immature reputation. Being thus foiled, however, they seem this year to have taken more than their former care to make their concerts what concerts on these great occasions should be—something more sterling and important than the long, aimless selections of popular airs and duets, which have proved, from their want of purpose, surfeiting to even provincial ears.

Having given a list of the principal performers and of the works selected for performance, the duty

which remains for us is merely to note a point or two, and to offer here and there a remark. This year the Birmingham band has been more powerful than ever,—probably the most splendid orchestra ever assembled in England:—the chorus fine, powerful, efficient, and clear in articulation. It was curious in the 'Elijah' to observe, that, whereas in the songs of Madame Novello, who otherwise sang very finely, not a word was audible—in the choruses, largely made up as they are of vocalists who without offence must be rated as less refined and instructed than she, not a word was lost.—The oratorio, more magnificently performed than on any former occasion, opened the Festival with great spirit and prosperity of result. The least acceptable feature in the performance was, Herr Fornes; who, now that he has learnt the notes, seems somewhat arrogantly to rely on his force of voice, and leaves the devotional poetry of the part to take care of itself.—The most perfect pieces of singing were the two *solos* by Madame Viardot, whose voice has entirely recovered itself during her long rest. There has been nothing in our time like her delivery of sacred music, so noble, so refined, so devotional, and always so purely vocal;—and among the very few subjects of regret, in the arrangements of the Birmingham Festival, has been, the comparatively small use made in the morning performances of powers at once so remarkable and so rare as hers.

At Monday evening's concert, it may be noted among promising signs of the times that the 'Walpurgis Night' pleased far more than it did on its introduction to the Birmingham audience:—otherwise, the public remained comparatively impassive, until the lustrous brilliancy of the execution of the overture to 'Guillaume Tell' excited a positive storm of delight, not to be allayed by the managerial ordinance against *encores*, and which would be content only with repetition during the rest of the evening. The music went off merrily. The *altissimo* notes of Mdlle. Zerr seemed particularly to please, though she sang much out of tune. These, no less than *Sarastro's* hymn from 'Il Flauto Magico,' well given by Herr Fornes, and the 'Cenerentola' *rondo*, executed more brilliantly than ever by Madame Viardot, escaped being demanded a second time only from respect to the wise recommendation already referred to.

Tuesday Morning.—Glorious as was Monday's performance of 'Elijah'—the miscellaneous act which opened the second day's Sacred Concert was more interesting to us for the sake of the novelties comprised. It commenced with Mendelssohn's 'Ave Maria,' in which the *solo* tenor part was well sung by Mr. Sims Reeves. But the characteristic beauty of this work, given to it by its Roman Catholic colour—and especially to be felt in the antiphonal 'Ora pro nobis' in the movement *common tempo*—was entirely thrown away, owing to the motett being sung to English text; in which so far from considering either the meaning, the occupation or the euphony of the original Latin, 'Ave Maria' has been replaced by such a sibilant phrase as 'Saviour of sinners,' and not merely the character of the work is destroyed, but its beauty is seriously damaged.—After this were performed the recently published fragments of 'Christus,'—that third oratorio so long and reverently meditated by Mendelssohn—and not, we believe, as many of our contemporaries have stated, to be numbered among the writings of those last days at Interlaken which gave birth to some English service music—the stringed Quartett in F minor, and the *finale* to 'Loreley.' As the movements from 'Christus' stand, they do not display that advance on 'Elijah' which Mendelssohn was determined that his third oratorio should mark, nor has the hearing of them in any point changed the opinion expressed by us on their publication. The *trio* of the three kings is tuneful and sweet, as we then said:—the chorus 'Daughters of Zion' is the finest, because the most original, of the series,—among the finest laments in sacred music. The trial scene might, we still think, have been reconsidered, had its composer lived to complete his work, and adverted to the number of the effects therein which had already been forestalled by himself. These choruses of 'Christus,' by the increase

of simplicity and ease displayed in them, demonstrate that resolution to make progress which would not have allowed its owner to rest content in self-iteration so long as any such rich store of ideas as he possessed was in his command.—Of the Anthem by Dr. S. Wesley, the younger, which came next, we regret to be unable to speak as we would gladly speak of the one new English composition produced at Birmingham. It is a weak, tiresome and pedantic exercise, not likely to be again heard.—Throughout the above performances the neglected state of the magnificent organ in the Town Hall became too obvious. It may be presumed, that no measures were taken at this Festival to exhibit that which should be the pride of Birmingham, in consequence of the instrument being so seriously out of tune. But should this have been permitted?—After this act, 'The Creation' was performed with great splendour.

The most noticeable things in Tuesday evening's concert were—the fine orchestral performances,—the excellent singing of Miss Dolby, Mr. Sims Reeves and Signor Tamberlik,—and the execution of Mendelssohn's *finale* to 'Loreley.' In this *solo* part was taken by Madame Novello, with all due command and compass of voice, without the romantic and impassioned expression demanded. It may be owing to the lady's want of energy and variety, that we were aware on Tuesday of a certain length, not to say heaviness, in the scene, while we felt its beauty as fully as we did on perusal. That this might and must have been remedied had the opera ever been put on the stage, we are satisfied. Grand features and striking points are everywhere, and experience of what a theatrical public will enjoy in these days of satiety and impatience is not to be theoretically acquired. We had expected a lighter and more fantastic instrumentation for the music given to the spirits. Nothing can be richer or more sonorous than the scoring, but it seems to us to have more of the head than of the heart of the modern master of the orchestra in it. It should be known, that he himself spoke of 'Loreley' merely as an experiment; and this simplicity and self-knowledge may be opposed to the blind idolatry of those who, because of their great admiration of his genius, are ready to place everything—the sketch and the picture—the study and the work made up of many studies—on the same level in their good graces. But whatever might have been the value of this *finale* as closing the act of a romantic opera, and to whatever modifications it might have been subject when it was put on the stage, there can be small question that as a grand-concert piece, as often as a capable *soprano*, chorus and orchestra can be assembled, it is precious. Of some of the finest dramatic music in the world, (which we never, it appears, to hear on the stage) we had a specimen on Tuesday in the great *scena* from Gluck's 'Orfeo'—sung by Madame Viardot in a manner never to be forgotten by any lover of the highest art and expression. Up to this point this noble performance was our most special and rarest treat in the evening performances at Birmingham; but as far as popularity there was concerned the jerks and squeaks of Mdlle. Zerr's *staccato* in the Queen of Night's *bravura* from 'Il Flauto' carried off the palm. Herr Kuhe played Mendelssohn's first *Concerto* inoffensively; and Signori Piatti and Bottesini one of their duett *fantasias*, which replace, with something of the same kind infinitely more amazing, perfect and beautiful, the duetts with which Lindley and Dragonetti were accustomed in their day to "witch the world" of festival-goers.

We shall next week bring to a close our notes on this brilliant meeting.

HAYMARKET.—Notwithstanding all remonstrances to the contrary, the management of this theatre have persisted in reproducing Mr. Buckstone's drama of 'Jack Sheppard.' Mrs. Keeley appeared in the part on Monday. Our readers know our opinion of the drama, and the class to which it belongs.

SADLER'S WELLS.—The tragedy of 'Lear' was revived on Monday. Mr. Phelps appeared to have re-studied, and in part to have re-cast, his imper-

sonation. His acting was much subdued,—and throughout exhibited judgment and taste.

MUSICAL AND DRAMATIC GOSSIP.—Though "Notes on the Festivals" stand instead of other gossip, in which the amount of matters claiming immediate attention is just now singularly meagre, they do not comprise all the musical events of interest which have taken place in England during the last seven days.

Those who were at Torquay this week ran a chance of enjoying perhaps the only musical treat of a very high order which has as yet been untasted by the English lover of executive display,—since we learned within the week that a Concert was about to be given there by Herr Henselt, the pianist. The impenetrability which hangs about other Russian things seems during this artist's long sojourn in St. Petersburg to have communicated itself to him. Very few have heard his playing,—which is said to be worth hearing in no common degree; while the extreme difficulty of his compositions, owing to the almost impossible extensions of hand which they demand, have prevented their being resorted to by the pianists,—and hence, few know or speak of them. We understand, that Herr Henselt's tour to England is not professional, and, it is said, that his objection to playing in public is very great; but we must hope that he will not return to his secluded state as chief pianist to H.M. the Czar without allowing himself to be heard by the lovers of pianoforte music in London,—the season, it may be added, for his comfort, being calculated to insure as much privacy for a public performance as even Herr Henselt's modesty could desire.

The Paris papers report the death of Mdlle. Noblet, long known as *première danseuse* at the Opera in that capital,—and who will be well remembered in England. She had suffered from a long and painful malady.

A very old singer has just died at Stockholm.—This is, M. Ahlberg, who "created," as the French say, the principal part in the opera of 'Gustavus Wasa'—the words of which were by King Gustavus the Third, and the music by the Abbé Vogler.

In a recent review of M. Leng's new work on Beethoven, M. Berlioz enters into the question of the two well-known redundant bars in the *scherzo* to the Symphony in C minor—after the fashion of M. Berlioz, which is, dogmatically rather than patiently. We believe the facts of the case to have been, that on Dr. Mendelssohn's becoming possessed of the original score of this composition, he induced MM. Breitkopf and Härtel to search among their archives,—from which search resulted the discovery of certain rough proof sheets, and an express direction from the composer enjoining the cancelling of the two bars in question. That this was not done in all the printed copies proves nothing. It is most curious to trace how errors once permitted are retained: otherwise we should not see in the copies of Beethoven's Pianoforte Sonatas used in the *Conservatoire* of Paris such an audacious mystification of the original text as is to be found at the close of the first *allegro* to the *Sonata* 'Adieu, absence, et retour,'—otherwise we should hardly find in the French edition of the *Agatha's grand scena* in 'Der Freischütz' a bar quietly added to the *recitativo*, after a purist so Spartan as M. Berlioz had undertaken to superintend the production of the work at the *Grand Opera*!—To the story, as we have told it, M. Berlioz does not think it worth while to refer: indulging, in preference, in conjectural criticism, stating that the two bars do not shock his nerves,—and quoting a letter from that rather apocryphal witness Herr Schindler.—That writer, resolute in putting himself forward as the sole depository of Beethoven's intentions, refused to accredit the story, because had matters been as we have narrated them, Herr Schindler is sure that he must have known, &c. But, that Herr Schindler's assumptions are not infallible in the matter of Beethoven, we had a new proof only a day or two since. This was furnished by a letter, addressed to the *Gazette Musicale*, by Prince Nicolas Boirs Galitzin:—to whom, in his retirement in a

remote corner of Russia, Herr Schindler's biography has only just penetrated. Therein, the Prince is accused of having forgotten to pay for the well-known Posthumous Quartets which were written at his instance.—The anecdote is formally denied by Prince Nicolas Galitzin; the place of payment and the persons through whose hands the money passed being specified by him.—All these "findings and provings" naturally give emphasis to the wish, that before Beethoven's contemporaries shall have entirely passed away, some one possessing the requisite musical knowledge, the moral toleration no less necessary, and the capacity for examining evidence, would execute a new Biography of Beethoven.

TWENTY-SECOND MEETING OF THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

THERE has been no departure on the present occasion from the ordinary course of the general proceedings followed at recent meetings of the British Association, save such as were determined by the locality. The summary runs thus. On Wednesday the 1st inst. the General Committee assembled, and the first General Meeting was held in the evening,—as we have already reported.—On Thursday, business began, as usual, in all the Sections,—and in the evening, a *soirée* was held in a large stone building intended to be used as a muslin warehouse, which had been set apart for the purposes of these meetings.—On Friday evening, Prof. Stokes delivered a lecture on some recent discoveries in the properties of light,—which he illustrated by diagrams and tables. Col. Sabine filled the chair on the occasion.—On Saturday there was a second *soirée* in the evening.—On Monday afternoon the General Committee assembled, at three o'clock, in Queen's College, for the purpose of determining the time and place of the next Meeting, and electing the office-bearers for the coming year:—and in the evening of the same day, Col. Portlock delivered a discourse, giving some account of the recent discovery of Rock Salt at Duncrue, near Carrickfergus, and on the geological bearing of similar formations and the practical considerations connected with the subject. Sir Roderick Murchison filled the chair.—The business of the Sections on these several days will be found, as usual, detailed in our columns.—On Wednesday, the General Committee again assembled, to sanction the Grants that had passed the Committee of Recommendations;—and at a later hour on the same day, the concluding General Meeting of the Association, for the accustomed ceremonial proceedings, was held. This brought the Twenty-second Congress to a close:—and the members dispersed on their several excursions of pleasure or of inquiry.

GENERAL COMMITTEE.

MONDAY.

The PRESIDENT in the chair.—Documents of invitation were read from various public bodies and Societies, of Hull, Leeds, Brighton, Liverpool and Glasgow:—after which, Col. SABINE called successively on the representatives for each town to address the Meeting.—Mr. C. FROST spoke on behalf of Hull.—Sir R. I. MURCHISON explained the position of Brighton and the claims of the South of England.—The PRESIDENT of the Philosophical Society of Liverpool and the MAYOR of that town alluded to their having received the Association once, and urged their anxiety to receive them again.—The pressing claim of this town for 1853 was ultimately waived:—and on the motion of Sir H. DE LA BECHE, seconded by Col. SYKES, the General Committee resolved that the next meeting should be held in Hull, in 1853.—Dr. R. ROBINSON then moved, Sir D. BREWSTER seconded, and the meeting resolved, that JAMES HOPKINS, Esq., be requested to take office as President elect.—Prof. OWEN proposed, and Col. CHESNEY seconded, the appointment of the EARL OF CARLISLE, LORD LONDENBOROUGH, W. SPENCE, Esq., M. FARADAY, Esq., Prof. SEDGWICK, C. FROST, Esq., C. WHEATSTONE, Esq., and Col. SYKES, as Vice-Presidents at Hull; and the motion having been put from the chair, it was carried unani-

mously.—The Local Secretaries are, Dr. H. COOPER and B. JACOBS, Esq.,—and the Local Treasurer, is E. SMITH, Esq.—It was also resolved that the meeting shall be held in the month of August or September:—the exact time to be fixed hereafter.

WEDNESDAY.

The PRESIDENT in the chair.—The GENERAL SECRETARY read, from the Committee of Recommendations, their Synopsis of Recommendations, of Reports, Researches, Applications to Government, and Miscellaneous Grants.—Col. SABINE stated, that it had been found expedient to arrange them under three separate heads:—

1. All Reports and Researches not involving Grants of Money nor Applications to Government.
2. Recommendations that did involve Grants of Money.
3. Recommendations not involving Money, but Applications to Government and Public Bodies.

1. Reports and Researches not involving Grants of Money nor Applications to Government.

That the thanks of the British Association be given to the Smithsonian Institution, for the communication of Charts illustrating the plan adopted by that Institute for reducing the general facts and the Meteorology of North America bearing on the laws of the great North American Storms, and that it be referred to the Committee to consider what steps it may be advisable to take for the purpose of extending the system and observations over the British portion.

That the thanks of the British Association be given to Prof. Dove, for his valuable communications respecting the lines of Abnormal Temperature on the Globe; and that it be referred to the Council to consider of the expediency of procuring copies of the Map of the Abnormal Temperatures in different months of the year, for the supply of Members of the Association.

That Mr. Sylvester be requested to draw up a complete report on the Theory of Determinants, to be laid before the next meeting of the Association.

That the Earl of Rosse, Dr. Robinson, and Prof. Phillips be requested to draw up a Report on the physical character of the Moon's Surface as compared with that of the Earth.

Communications to be printed entire.

That the Observations of Mean Daily Temperature and Fall of Rain at 127 stations of the Bengal Presidency, be printed at length in the next volume of Transactions.

That Mr. James Thomson's paper, 'On Vortex Water-Wheels,' be printed at length in the Transactions of the Association.

2. Reports and Researches involving Grants of Money.

That the sum of 200*l.* be placed at the disposal of the Council, for the maintenance of the establishment of the Observatory at Kew.

That Dr. Hodges be requested to carry on the Experiments which he has commenced, in relation to the preparation of Flax, and the chemical nature of the products of the fermentation which occurs in the process of retting; and that 20*l.* be placed at his disposal for the purpose.

That Mr. R. Hunt and Dr. Gladstone be requested to continue their Experiments on the Influence of Solar Radiation, — on Chemical Combination, — Electrical Phenomena, — and the Vital Power of Plants growing under different Atmospheric Conditions; with 15*l.* at their disposal for the purpose.

That Mr. Mallet be requested to continue his Experiments on the Propagation of Earthquake Waves; availing himself of the operations now carrying on at Holyhead; with 50*l.* at his disposal for that purpose.

That Dr. Lankester, Prof. Owen, and Dr. Dickie, be a Committee to continue the superintendence of the publication of tabular forms in reference to periodical phenomena of animals and vegetables; with 10*l.* at their disposal for the purpose.

That Mr. H. E. Strickland, Dr. Lindley, and the other members of a Committee already named, be requested to continue their Experiments on the Vitality of Seeds; with 5*l.* 10*s.* at their disposal for the purpose.

That Mr. R. Patterson, Dr. Dickie, Mr. Hyndman, and Mr. Granger, be requested to carry out a system of dredging, on the North and East coasts of Ireland; with 10*l.* at their disposal for the purpose.

That Mr. W. Thomson, Prof. Balfour, Prof. Goodair, Mr. Peach, and Dr. Greville, be requested to carry out a system of dredging, on the East coast of Scotland; with 15*l.* at their disposal.

That Prof. E. Forbes and Prof. T. Bell be requested to assist in the publication of the remaining part of Dr. Williams's Report on the Structure of the Annelida; with 10*l.* at their disposal for the purpose.

That the sum of 5*l.* be granted for defraying the expenses attending the distribution of a Manual of Ethnological Inquiry prepared by Mr. Cull and a Sub-committee appointed in 1851.

That a large Outline Map of the World be provided for the use of geographers and ethnologists,—and that Sir R. I. Murchison, the Lord Bishop of St. Asaph, and the Secretaries of the Geographical and Ethnological Societies be a Committee for carrying this into effect; with 15*l.* at their disposal for the purpose.

Summary:—New Observatory, 200*l.* (Council); Flax, 20*l.* (Dr. Hodges); Solar Radiation, 15*l.* (Hunt); Earthquake and Waves, 50*l.* (Mallet); Periodical Phenomena, 10*l.*; Vitality of Seeds, 5*l.* 10*s.*; Dredging Coast of Ireland, 10*l.*; Dredging Coast of Scotland, 15*l.*; Report on the Annelida,

10*l.*; Ethnological Queries, 5*l.*; Map of the World, 15*l.* Total 355*l.* 10*s.*

3. Recommendations not involving Money, but Applications to Government or Public Bodies.

That in order to meet the growing wants of science, and remedy, in some degree, the inconvenience caused to its cultivators by the dissociated, incomplete, and discontinuous publication of scientific researches, it is expedient that the British Association, which, by its constitution, includes representatives of the various scientific institutions of the empire, should propose such general views on the subject as may be suggested by the experience of its members.

That a Committee be formed for the purpose of considering of a plan by which the Transactions of different Scientific Societies may become part of one arranged system, and the records of facts and phenomena be rendered more complete, more continuous, and more convenient than at present.

That it be an instruction to this Committee to place itself in communication with the Council of the Royal Society, and the Councils of other Scientific Societies which receive scientific communications at regular meetings.

That the Committee consist of Prof. W. Thomson, Prof. Andrews, Leonard Horner, Esq., Prof. Owen, Sir R. I. Murchison, Col. Sykes, W. J. Rankine, J. C. Adams, Esq., Dr. Lloyd, Prof. Wilson (Belfast), Dr. Robinson, Prof. Bell, Prof. Graham, W. R. Grove, Esq., Sir D. Brewster, and *ex officio* the General Officers, with power to add to their number.

That it is important to have a Quarterly Record of British and Foreign Publications and discoveries, and that the consideration of the practicability of obtaining this be referred to the same Committee.

That a representation be made to the Royal Society of the importance attached by M. Otto Struve to the determination of the constant of "Irradiation" for the Huyghenian object-glass of 123 feet radius.

That it is expedient to proceed without delay with the establishment in the Southern Hemisphere of a Telescope not inferior in power to a three-feet reflector; and that the President, with the assistance of the following gentlemen, viz. Lord Rosse, Dr. Robinson, Lord Wrottesley, Mr. J. C. Adams, the Astronomer Royal, J. Nanskyth, Esq., W. Lassell, Esq., Sir D. Brewster, and E. J. Cooper, Esq., be requested to take such steps as they shall deem most desirable to carry out the preceding resolution.

That the publication of the reduction upon a scale of one inch to the mile of the Townland Survey of Ireland, ordered to be made in connexion with the Geological Survey by the Ordnance, and for which a vote was taken for 1853-54, upon the estimates of that department, be recommended to the Government to be accelerated.

That the Council of the British Association be requested to continue their efforts to obtain the assistance of the Government for the publication of Mr. Huxley's researches.

That, with the view of obtaining an accurate knowledge of the coastline on and near the Eastern coast of Africa, from the Red Sea to 10° S. lat., the very important products of which have been enumerated by the late Sir Charles Malcolm and Mr. W. D. Cooley, the British Association do call the attention of the Court of Directors of the Honourable the East India Company to the desirableness of sending an Expedition thoroughly to explore that region, as recommended by the Royal Geographical Society of London. The deputation to consist of the President of the British Association and the President and Vice-Presidents of the Royal Geographical Society.

That most important meteorological data are attainable by Balloon Ascents, and that the Council be requested to solicit the co-operation of the Royal Society in this investigation.

That the Government be requested on the part of the British Association to connect with the Survey of the Gulf Stream an examination of the Zoology and Botany of this current, and also of the Temperature of the Seas around the Shores of the British Islands.

The Committee having been informed that an Expedition has been proposed for ascending the Niger to its source, by Lieut. Lyon Macleod, R.N., and that it has been recommended to Her Majesty's Government by the Royal Geographical Society and the Chamber of Commerce of Manchester, resolve that the President be requested to confer with the President of the Royal Geographical Society in bringing the subject before the Government.

The Committee having understood that Dr. Bakie, Mr. A. Adams, and Mr. W. T. Alexander, each of them in the medical branch of Her Majesty's Navy, have offered to undertake a thorough Exploration of the Countries watered by the River Magdalena, in South America, and in respect to their Botanical, Zoological, and Geological Products, on the condition of being allowed their full pay, requests the President of the Association and Sir R. I. Murchison to urge the Government to accede to the proposition.

That the systematic collection of the Agricultural Statistics of Great Britain of a similar nature with the Returns of the Agricultural Produce of Ireland, prepared under the care of Major Larcom, R.E., is a desideratum, and would be of great public utility; and that the President, Mr. Heywood, Major Larcom and Col. Sykes be requested to communicate the above resolution to the Government.

The Committee being aware of the liberality with which the Master-General and Board of Ordnance have supplied the several engineer stations with instruments for Meteorological Observations, would suggest the advantage of adding to their instruments, in the Ionian Islands, others for measuring the direction and amount of earthquake vibrations, so frequent in these islands.

That it is important that Prof. W. Thomson and Mr. J. P. Joule be enabled to make a series of experiments, on a large scale, on the thermal effects experienced by Air in rushing through small apertures; and that a representation to that effect be made to the Royal Society.

That a Committee, consisting of the Rev. Dr. Robinson

Prof. C. P. Smyth, W. Fairbairn, Esq., W. J. M. Rankine, Esq., C.E., and W. S. Ward, Esq., be requested to take into consideration the Methods of Cooling Air for the Ventilation of Buildings in Tropical Climates by Mechanical Processes, and, should they see fit, to propose a memorial, in the name of the British Association, to the Hon. East India Company, representing the advantage of making a trial of a process of that kind on a large scale, e.g. in a hospital.

GENERAL MEETING.

The final General Meeting of the Association was held afterwards, in May Street Church, at three o'clock.—Col. SABINE in the chair.—The general result of the meeting was stated to be, as compared with the Ipswich meeting:—of Members—Ipswich, 711—Belfast, 1,108; in money, Ipswich, £207.—Belfast, 1,106*l*. The List of Officers, already given, and the Recommendations of the Committee of Recommendations, were read over.—Dr. ROBINSON gave a review of the business of the Sections.—On the motion of Lord NAAS, seconded by Sir R. I. MURCHISON, the thanks of the Meeting were given to Col. Sabine; and after the customary other votes of thanks, the Congress adjourned.

THURSDAY.

SECTION A.—MATHEMATICAL AND PHYSICAL SCIENCE.

President.—Prof. W. THOMSON.

Vice-Presidents:—J. C. ADAMS, Sir D. BREWSTER, Right Rev. Dr. DENNY, Sir W. R. HAMILTON, Rev. Dr. LLOYD, Prof. STOKES, Secretaries:—W. J. M. RANKINE, J. TYNDALL, Prof. DIXON, Prof. STEWART.

Committee:—Dr. ANDREWS, J. F. BAIRD, R. B. B. Carmichael, The Earl of DUNDEE, W. Fairbairn, A. Graham, Prof. GRAY, H. HENNESSY, Rev. Dr. E. HINCKS, Prof. JELLETT, Dr. LEE, Prof. PHILLIPS, Col. PORTLOCK, Dr. E. Du Bois-Reymond, Rev. Dr. ROBINSON, F. RONALDS, The Earl of ROSE, C. P. SMYTH, Col. SYKES, R. TOWNSEND, J. WELSH, Prof. WILSON, J. WILSON, Lord WROTTESLEY, T. WEBSTER.

'Fifth Report on Observations of Luminous Meteors,' by the Rev. Prof. POWELL.—This report contained various series of observations communicated by Dr. Buist, from India.—Mr. Lowe, and several other observers in Great Britain, during the past year—besides some of older date; especially a series from 1818 to 1850, by Mr. Webb.

'On the Action of those Storms to which the Rotatory Theory has been usually applied,' by R. RUSSELL.—The object was to point out certain difficulties of a theoretic nature if we admit the rotatory and at the same time progressive motion of those storms; and also to show, by comparison with observations, that the rotatory theory was not reconcilable with certain storms of the British Islands.

'Observations on the Zodiacal Light made at the Kew Observatory from January to April, 1850,' by Mr. H. R. BIRT.—These observations were made at the Observatory of the British Association during the author's residence there. It appeared to the author that two very important features presented themselves in connexion with the observations:—viz., the position of the great mass of light being constantly north of the ecliptic, and the apparent change in the form of the light, or at least that portion of it forming the apex of the luminous triangle on the cone of light, which is very perceptible in the groups of observations, those in February presenting a narrower cone, the axis being very perceptibly inclined to the ecliptic. In this respect these observations are in decided contrast with those of March, when the cone of light had become much larger, the apex more rounded, and the inclination of the axis to the ecliptic changed. It would appear from the projections that accompanied the observations, that while the great mass of light was still northward of the ecliptic the direction of the axis was so inclined that it occupied a different position with respect to the ecliptic than it did in February. In the month of April the author considered the axis of the zodiacal light to be slightly north of the ecliptic, the northern side of the cone still exhibiting the greatest luminosity. The contrast of the observations in this month (April) with those in February, is very remarkable;—the cone had become very considerably enlarged, and consequently much broader than the cone seen in February. Two observations, those of March 3 and April 10, were particularized as indicating that under peculiar circumstances we see more of the zodiacal light than is presented to us ordinarily. In connexion with these phenomena the author observed earlier in March a sudden brightening of the light for an instant, and also variations in its lustre of an intermittent character. These intermissions of brightness were observed

on the same evenings by Mr. Lowe, at Nottingham. They are described by the author not to be of the nature of pulsations in the usual acceptation of the term, but to consist of alternate brightenings and dimmings of the entire mass of light such as might be produced by the approach and recess of a luminous body.

'On the Re-concentration of the Mechanical Energy of the Universe,' by W. J. M. RANKINE.—Mr. Rankine observed that—It has long been conjectured, and is now being established by experiment, that all forms of physical energy, whether visible motion, heat, light, magnetism, electricity, chemical action, or other forms not yet understood, are mutually convertible; that the total amount of physical energy in the universe is unchangeable, and varies merely its condition and locality, by conversion from one form to another, or by transference from one portion of matter to another. Prof. W. Thomson has pointed out that in the present condition of the known world there is a preponderating tendency to the conversion of all the other forms of energy into heat, and to the equable diffusion of all heat; a tendency which seems to lead towards the cessation of all phenomena, except stellar motions.—The author of the present paper points out that all heat tends ultimately to assume the radiant form; and that, if the medium which surrounds the stars and transmits radiation between them be supposed to have bounds encircling the visible world, beyond which is empty space, then at these bounds the radiant heat will be totally reflected, and will ultimately be re-concentrated into foci; at one of which if an extinct star arrives, it will be resolved into its elements, and a store of energy re-produced.

'On the Causes of the Excess of the Mean Temperature of Rivers above that of the Atmosphere, recently observed by M. Renou,' by W. J. M. RANKINE.—M. Renou having for four years observed the temperature of the River Loire, at Vendôme, as compared with that of the atmosphere, has found, that the mean temperature of the river invariably exceeds that of the air, by an amount varying from $\frac{1}{4}$ to $\frac{3}{4}$ centigrade degrees, and averaging 2*2*/₄ centigrade, and a similar result has been deduced from observations made by M. Oscar Valin on the Loire at Tours. M. Renou and M. Babinet account for this fact by the re-radiation from the bed of the river of solar heat previously absorbed by it. Mr. Rankine thinks this supposition inadequate to account for the facts; because the excess of temperature of the river over the air was considerably above its mean amount in November, and very near its maximum in December; and because the mean diurnal variation of temperature of the river was much less than that of the air. He considers that friction is more probably the principal cause of this elevation of temperature; for if water descends in an uniform channel, with an uniform velocity, from a higher level to a lower, the whole power due to its descent is expended in overcoming friction; that is to say, is converted into heat, as the experiments of Mr. Joule have proved. This must cause an elevation of temperature, which will go on until the loss of heat by radiation, conduction, and evaporation balances the gain by friction, and at this point the temperature of the river will remain stationary.

'On certain Magnetic Curves, with Electrical and Hydrodynamical Applications,' by Prof. W. THOMSON.—The author explained the manner in which these curves were conceived to be generated; then drew attention to a simple integral formula which resulted from a long mathematical investigation which he had drawn out on a board; then, by assigning several values to one of the constants, showed a diagram which embraced all these curves; but as this was very complicated, he exhibited several diagrams in which the curves which belonged to the several systems were separated from each other, pointing out their relations to the various observed phenomena, and particularly their striking resemblance to the curves lately exhibited at the Royal Institution by actual experiment by Prof. Faraday, and showed their important applications to electrical and hydrodynamical researches as well as researches on heat. It would be impossible by a mere abstract to make this communication generally intelligible.

'On the Mutual Attraction between two electrified Spherical Conductors,' by Prof. W. THOMSON.—

This communication was supplementary to one made to the Physical Section at the Oxford Meeting, and formulæ were placed before the Meeting for working out the details of the subject.

'On the Form of Images produced by Lenses and Mirrors of different sizes,' by Sir DAVID BREWSTER.—The object was, to show that the photographic portraits taken with cameras with large object-glasses or large mirrors must necessarily be distorted and hideous, as in fact it is notorious they are; and that hence all persons engaged in this new and most important art should receive with gratitude any scientific discovery which promised to correct so serious a defect—which by some has been attributed to the imperfection of the lenses employed,—by others to the unsteadiness of the sitter who is having his portrait taken,—by others, again, to the constraint of features and limbs under which he submits to the operation; but it is by all admitted and deplored. If we consider that the pupil of the human eye is only about 2-10ths of an inch in diameter, it is obvious that the images formed by the eye of those solid objects placed in front of it, and by which we are accustomed to see them, to judge of them, and to recognize them, cannot embrace any of the rays of light which come from those parts of the object which lie in such positions towards the sides, top, bottom or hinder parts as cannot pass in straight lines to an aperture of the size of the pupil,—in fact, unless it agree almost exactly with the exact perspective form of the object, the pupil being the point of sight. If then an object be placed before a lens, the part of the lens towards its centre of the size of the pupil is capable of forming a correct image of that object, consisting of rays coming from precisely the same parts of it as an eye would receive were its pupil in the same position. But all the parts of the lens or mirror of the same size which lie around and at a distance from this portion of it, would receive rays coming from parts of the solid object which the true eye could not receive, and which must therefore form as many unnatural images as there were such parts; and the photographic picture which embraces and confounds into one hideous mass all these, any one of which by itself would be correct, must in the very nature of things give a most confused and displeasing representation of the object. Sir David illustrated and proved these assertions by a diagram of a lens with a simple solid form, a cylinder topped by a cone behind, placed in front of the lens, pointing out the parts which alone could be embraced in a correct perspective view of it, and what parts the large lens or mirror would moreover receive and transmit rays from, to be jumbled in the photographic picture with that which would alone give a correct idea of the object as seen. He showed from the now familiar illustration afforded by the binocular stereoscope, how very dissimilar were the pictures of the same object received by small lenses placed as near as the two pupils of the human eye; images so distinct that a child could readily distinguish them; and yet multitudes of such images were all received and jumbled together in those photographic pictures where lenses or mirrors of that or larger—say three or four inches—aperture were used. "The photographer, therefore," said Sir David Brewster, "who has a genuine interest in the perfection of his art will, by accelerating the photographic processes with the aid of more sensitive materials, be able to make use of lenses of very small aperture, and thus place his art in a higher position than that which it has yet attained. The photographer, on the contrary, whose interests bribe him to forswear even the truths of science, will continue to deform the youth and beauty that may in ignorance repair to his studio, adding scowls and wrinkles to the noble forms of manhood, and giving to a fresh and vigorous age the aspects of departing or departed life." He then produced an exact diagram of photographic images of a simple object produced by Mr. Backle of Peterborough, whose Talbotypes obtained a Council Medal at the Great Exhibition. The acting diameter of the lens was $\frac{3}{4}$ inches; and by using it with all covered, except a central space of 2-10ths of an inch diameter, and then along with this space exposing circular spaces of the same size towards the outer circumference of the aperture, the effect of the combination of the marginal pictures was most distinctly

exhibited and demonstrated, by haloes extending round the true image, and the sharp cross lines ruled on the object and shown in the image with the small lens, but all confused in that with the surrounding apertures.

'On an Account of a Rock-Crystal Lens and Decomposed Glass found in Nineveh,' by Sir DAVID BROWSTER.—Sir David said that he had to bring before the Section an object of so incredible a nature that nothing short of the strongest evidence was necessary to render the statement at all probable:—it was no less than the finding in the treasure-house at Nineveh of a rock-crystal lens, where it had for centuries lain entombed in the ruins of that once magnificent city. It was found in company with several bronzes and other objects of value. He had examined the lens with the greatest care and taken its several measurements. It was not entirely circular in its aperture, being 1.6-10ths inches in its longer diameter and 1.4-10ths inches in its shorter. Its general form was that of a plano-concave lens, the plane side having been formed of one of the original faces of the six-sided crystal of quartz, as he had ascertained by its action on polarized light,—this was badly polished and scratched. The convex face of the lens had not been ground in a dish-shaped tool in the manner in which lenses are now formed, but was shaped on a lapidary's wheel, or in some such manner. Hence it was unusually thick, but its extreme thickness was 2-10ths of an inch, its focal length being 4½ inches. It had twelve remains of cavities which had originally contained liquids or condensed gases; but ten of those had been opened probably in the rough handling which it received in the act of being ground; most of them therefore had discharged their gaseous contents. Sir David concluded by assigning reasons why this could not be looked on as an ornament, but a true optical lens.

Sir David then exhibited specimens of the decomposed glass found in the same ruins. The surface of this was covered with iridescent spots more brilliant in their colours than Peacock copper ore. Sir David stated that he had several years since explained how this process of decomposition proceeded, on the occasion of having found a piece of decomposed glass at St. Leonard's. It had contained manganese, which had separated from the siliceous glass, at central spots round which circles of most minute crystals of true quartz had arranged themselves; bounded by irregular jagged circles of manganese, these being arranged in several concentric rings. When this process reached a certain depth in the glass it spread off laterally, dividing the glass into very thin layers, and new centres seemed to form at certain distances, and thus the process extended.

Three short papers were read, communicated by Prof. POWELL, 'On a Peculiarity of Vision,'—'On Converging Sunbeams,' and 'On Luminous Beams.'

FRIDAY.

Dr. ROBINSON opened the meeting by apologizing for the irregular step which he was about to take in bringing before them matter not included in the programme of the day. The drawings before him had been intended for another day; but the unexpected arrival of Lord Rosse (who could remain among them only for a few hours) induced the Committee to bring them forward, that they might have the advantage of any explanation which might be wished for from his Lordship. As the most familiar of their number with this class of objects, he had examined the drawings which contain careful delineations of several nebulae not previously examined, and certainly the contemplation of them was well fitted to increase the obligations of the astronomical world to Lord Rosse, as well as to fill every mind with astonishment at the wondrous revelations of his matchless telescope. Each of them was a new proof of a former statement of his,—that this instrument would probably disclose forms of stellar arrangement, indicating modes of dynamic action never before contemplated in celestial mechanics. He referred to the drawings of M. 51, in which the spiral or vorticeous arrangement of the stars and unresolved nebulae was first remarked in its simplest form; and to others already published where it presents itself under conditions of greater complexity. He also referred to the important fact that the class

of planetary nebulae might now be fairly assumed to have no existence, as all of them which have been examined prove to be either annular or of a spiral character. Thus M. 97, which was considered by Sir John Herschel the finest specimen of them, and seemed even in his eighteen-inch reflector a uniform disc, presents in the six-feet a most intricate group of spiral ones, disposed round two starry centres, looking like the visage of a monkey. Among the new ones are H. 2241. It is a ring of stars, with faint nebula within, and a fine double star near its edges: H. 2075 of the same kind, but with a bright star almost exactly central, and nine others round it, evidently part of the same group. H. 450 is a most extraordinary object; the ring exactly circular, its light mottled and flickering, and within it what is evidently a globular cluster. Scarcely less surprising, but more magnificent from its association, is the planetary nebula at the edge of M. 46, which he had seen, though in a night not so favourable as that must have been when the drawing was made. It is a resolvable double ring, or rather spiral, with a central star; and from the improbability of two objects so rare as a splendid cluster, and one of their compound rings being casually connected, it seems reasonable to think they constitute one system. The double star ϵ Orionis belongs also to this class; and he called attention to the absolute darkness of the aperture in the nebula round the two stars, and that the larger of them was at its edge, instead of being central. He argued from the remarkable difference between these objects as seen in the telescopes of Lord Rosse (even the three-feet) and those of previous observers, how desirable it was that a complete review of the nebulae should be made without loss of time. Even now much labour and talent were expended in theorizing on the imperfect data given by instruments which, though matchless in their time, have now been surpassed. Among others, he directed the notice of the Section to H. 602, where the two clusters and the associated spirals are propelled into ellipses; to H. 2205, in which the long, resolved ray, being the most intense, was alone seen by Herschel, but the magnificent spirals and their central stars escaped him. M. 65, and H. 857 appear to be helices seen obliquely. But the most curious one is M. 33, of which the centre is a triple star disposed as an equilateral triangle among a mass of smaller stars, from which proceed eight or nine spirals, and round all is an enormous nebula, in which however no spiral character had yet been traced. There were several examples of another singular system—nebulae streaked with dark bands; such Bond discovered in the great nebula of Andromeda, H. 399, a wisp; H. 1393, a long ray of most marvellous appearance; H. 218, an oblique, with sixteen or seventeen dark transverse stripes; and H. 315, having in the nebula a cluster nearly insulated by offsets from the broad, curved, dark band, are among the most surprising. But the number of these curious objects was so great that their time would only permit him to invite their notice to H. 1052 and 1053, where the cause of spirality had been interrupted by some other forces that bent the system at a right angle and drew the nebula into a straight ray; to H. 444, a double-resolved nebula inclosed in a large and faint oval ring; and above all to M. 27, the "Dumb-bell" nebula as shown by the six-feet, with its brilliant two clusters of comparatively large stars, its dark bands, and the faint range which surround it, differing even more from the picture of the three-feet than that does from the figure of Herschel. In the name of the Section he thanked Lord Rosse, not merely for the pleasure which they received from the sight of the wonders, but from the unremitted and precious gifts which he was conferring on astronomy. Would he also increase their gratitude by mentioning any improvements which he might have lately made in the methods of suspending these large specula in their tubes, or in the process of polishing the latter, with reference to the possibility of its being practised with success by persons who had not the long experience and mechanical knowledge of his Lordship.

Lord Rosse adverted to the peculiar condition of equilibrium which must prevail in these systems, or rather to the forces which are required to produce the peculiar constitution which they indicate, and pointed out the difficulties of such an investigation. It could, however, not be undertaken with advan-

tage till we possess a much more extended collection of data,—to which he would contribute to the utmost of his power. These drawings were based on measures carefully taken with a bar-micrometer (the only one available in such cases), and he believed they might be trusted. He had already described the improvement effected by supporting the speculum on its levers by 81 balls, and mentioned the striking fact, that with a speculum weighing 3½ tons, a slight pressure of the hand would deform for a time the image of a star. He had since effected a further improvement by supporting the edge of the speculum in a hoop mounted in jinnals. As to polishing, he had recently made many experiments with 3-feet specula, in reference to the object of Dr. Robinson's question, and in particular had found that, by increasing the speed of the second eccentric in this machine, the process was rendered so much more certain that, desiring one of his workmen, a smith, to perform the whole process, without any superintendence on his part, he produced a speculum,—not perhaps absolutely perfect, but capable of doing excellent work. He had no doubt that any person of ordinary mechanical capacity would be able to do as much with a little instruction; and he would be most willing to give that instruction to any observer that might be placed in charge of a large reflector.

'On the Thermal Effects of Air rushing through small Apertures,' by J. P. JOULE and Prof. W. THOMSON.—Prof. Thomson wished to lay before the Section the results of a set of experiments lately undertaken by Mr. Joule, at his suggestion, and partly with his assistance, and as many of the details as time would permit. He commenced by explaining Mr. Joule's original idea that all mechanical action could be reduced to an equivalent of heat, and that his first determination led to the conclusion that a difference of 170°, afterwards corrected to 172°, was equivalent to 1 lb. raised 1 foot in a second, thus affording the mechanical unit of heat. He then explained Meyer's hypothesis, stating that the object of the experiments undertaken by Mr. Joule and himself was, to test the accuracy of this. In these experiments air had been forced to pass by the action of a condensing pump rapidly through small apertures, and through spiral tubes of small diameter, surrounded by water; heat was developed by the friction, but cold afterwards resulted from the expansion, and the object was to ascertain which of these preponderated. But the experiments required such accuracy of adjustment of the position of the thermometer, and were affected by so many circumstances, that the results were not satisfactory. It then occurred to Mr. Joule to force the air through the pores of a diaphragm of leather on it, to allow it then to expand into a tube of vulcanized india rubber, surrounded by water; and in this arrangement it was found that the thermometer could be brought down nearly into contact with the leather diaphragm. But although these experiments also led to the conclusion that rather more heat was generated by the compression and friction than was afterwards consumed in the expansion, yet many causes, such as the rapid transmission of heat through the india-rubber tube, &c., tended to render the results which depended on very minute differences, doubtful. He exhibited diagrams of the apparatus employed and tabulated details of the experiments, and concluded by expressing a hope that some of the money placed by Government at the disposal of the Royal Society for aiding scientific research would be appropriated to enabling them to carry on these experiments on a large scale; and to use pumps worked by steam-power instead of small hand-pumps to force large quantities of air rapidly through the small apertures,—of which the friction was to be tested.

Dr. TYNDALL suggested the use of thermo-electric batteries, instead of thermometers, in these experiments.

Prof. THOMSON stated that they had been tried, and gave reasons why their use had to be abandoned.

'On the Red Prominences observed during a total Solar Eclipse,' by Prof. C. PIAZZI SMITH.—The Professor reported the results of several experiments, and was of opinion that they indicated the probability of a spurious origin for the red prominences at the surface of lunar mountains; but that

the experiments should be tried on a high mountain, in an atmosphere a little more nearly approaching that of the Moon in rarity and purity.

'On the Molecular Peculiarities of certain Organic Substances,' by Dr. JOHN TYNDALL.—Drawn by former inquiries to the contemplation of the peculiarities of molecular action, and attracted more and more by the extreme suggestiveness of the subject, Dr. Tyndall has commenced a series of researches on Molecular Influences; and a portion of his results form the subject of the present communication.

A letter was read, giving an account of a case of Mirage in Radnorshire.

Sir DAVID BREWSTER stated, that in certain cases the air acquired the power of reflecting objects as vividly and as accurately as a looking-glass;—the case which he had just read being an exemplification of this. In other cases,—as on that of the well-known spectre of the Brocken, the illusion was merely the shadow of the observer thrown on a mass of vapour, while the place he stood on was itself more clear. He then referred to another letter received,—giving an account of a like phenomenon observed near Dublin, accompanied by a rainbow surrounding the shadow.

'On the Fata Morgana of Ireland,' by Mr. M'FARLAND.—These singular illusions are termed in the Irish language, *Duna Feadhreach*, or Fairy Castles. As proof that the Morgana had appeared as an island, either resting or floating on the sea prior to 1185, Mr. M'Farland read a passage from the topographical history of that country, by Geraldus Cambrensis (lib. ii. c. 12). He then referred to the "*Miranda loca*, que vidit St. Brandanus in Oceano," to which Usher alludes in his "*De Hiberniâ*" (p. 813), and quoted an unpublished History of Ireland, composed about 1636, (and now remaining in MS. in the Library of the Royal Irish Academy at Dublin), that speaks of an "Iland which lyeth far att sen, on the west of Connaught, and sometimes is perceived by the inhabitants of the Owles and Iris; also from St. Helen Head, beyond the haven of Calbeggs (Killibegs, Donegal). Likewise, severall seamen have discovered it att sea as they have sailed on the western coasts of Ireland." Mr. M'Farland also read from the Chronographical Description of Connaught, written in 1684, by Roderick O'Flaherty, and published by the Irish Archaeological Society, in which it is recorded (p. 68), that, "From the Isles of Arran and the West continent, often appears visible that enchanted Island, called O'Branil, and in Irish Beg-ara, or the Sessen Arran, set down in cards of navigation. * * There is, westward of Arran, in sight of the next continent, Skerde, a wild island of huge rocks; these sometimes appear to be a great city far off, full of houses, castles, towers, and chimneys; sometimes full of blazing flames, smoke, and people running to and fro. Another day you would see nothing but a number of ships, with their sailes and riggings; then, so many great stakes or reeves of corn and turf."—Mr. M'Farland next cited the 'History of the Parish of Ramoan (Ballycastle),' by the Rev. Wm. Connolly (1812), in which it is stated, that the author had received a minute description of the Fata Morgana from several persons who saw it, on different summer evenings, along the shore of the Giant's Causeway; shadows resembling castles, ruins and tall spires darted rapidly across the surface of the sea, which were instantly lengthened into considerable height; they moved to the eastern part of the horizon, and at sunset totally disappeared. This work makes mention of an earlier one (of 1748), by a gentleman who resided near the Causeway, and which presented a long account of an enchanted island, annually seen floating along the coast of Antrim. Reference was afterwards made to 'Plumptree's Narrative' (of 1817), as showing that, at Rathlin—a considerable island opposite to Ballycastle—a belief then prevailed, that a green island rose every seventh year, out of the sea, between it and the promontory of Bengore; the inhabitants asserting that many of them had distinctly seen it, crowded with people selling yarn, and engaged in various other occupations common to a fair. The notes to the second book of Dr. Drummond's poem on the 'Causeway' were also glanced at, as contain-

ing an account of other cases of the Fata Morgana, by the Bushfoot Strand and Tor-point. So, a person still living (and whose name, &c. were given) conceived that he had a sight of the floating isle, off Fair-Head; that it seemed to be well wooded; and that he could distinguish upon it the forms of buildings, and a woman laying out clothes. Mr. M'Farland then mentioned that, in June, 1833, he himself and a party of friends, when standing on a rock at Portbalintrea, perceived a small roundish island as if in the act of emerging from the deep, at a distance of a mile from the shore; at first, it appeared but as a green field, afterwards it became fringed with red, yellow and blue; whilst the forms of trees, men and cattle rose upon it, slowly and successively; and these continued for about a quarter of an hour, distinct in their outlines, shape and colour; the figures, too, seemed to walk across it, or wandered among the trees, the ocean bathed it around, the sun shone upon it from above; and all was as fresh, fair, and beautiful as a dream of heaven.—till the sward assumed a shadowy form, and its various objects, mingling into one confused whole, passed away as strangely as they came. Further, Morgana had occasionally assumed the semblance of a beautiful bridge that spanned the Sound between the Skerry rocks and the strand at Portrush, and having people passing and repassing over it. A particular instance of this was stated—as well as of the appearance of the sea, at Ballintoy, of what resembled a city with its streets, houses, spires, &c. Two occasions were then specified, in which the Fata had been seen in the sky—the one in the summer of 1847, over the ferry at Lough Foyle, and the other on the 14th of December, 1850, near to the Bannmouth; and in the course of which the images of troops, ships, &c. were reflected on the clouds. Four other cases of the Aerial Morgana were adduced, as witnessed about the town and coast of Waterford in 1644, and at the close of the last and commencement of the present centuries, and taken from the 'Voyages and Observations' of M. le Gown, Brewer's "Beauties of Ireland," (vol. 2, p. 387, n.) and the 13th volume of the *Phil. Mag.*, old series. Mr. M'Farland considered that these various exhibitions of the Fata Morgana might all be accounted for by applying to those parts of the coast on which they had been displayed, the theories of Minasi, and M. Honel, as advanced by them in explanation of similar phenomena, seen on and about the Strait of Messina. The Northern Channel of Ireland presents, to a very great degree, the same data, as regards shape, indentations, currents, and bitumen as that strait does, and on which their theories rest; and he believed that, to some extent at least, so did the sea in the neighbourhood of the 'Isles of Arran and town of Waterford. Where the Marine Morgana was found, the Aerial might be expected, and the Prismatic was a mere corollary to the first.

'Account of a Case of Vision without Retina,' by Sir D. BREWSTER.—In the course of last summer I met with a gentleman who had a peculiarity of vision of a very remarkable kind, and one of which I believe there is no other example. While hunting he fell from his horse, and received such a severe blow upon his head as to deprive him entirely of the sight of one eye, and to a great extent of the sight of the other. Neither of the eyes had suffered the slightest local injury from the blow, and therefore the total blindness in one eye and the partial blindness in the other arose from the insensibility of the retina, caused by the disorganization of the part of the brain more immediately connected with the origin of the optic nerves. The degree of vision which remained in one eye was such as to enable its possessor to recognize any friend at the distance of 400 or 500 yards, or more generally speaking at a considerable distance; but in society he could not recognize his most intimate acquaintance. He could see only the eye or the mouth of his friend; and he was not able to obtain, from the duration of the impression of light, and the rapid transference of his eye from one feature to another, such a combination of the separate impressions as to give the likeness which they composed.

Sir David explained this singular result.

'On the Sources of the Heat generated by a Galvanic Battery,' by Prof. W. THOMSON.—The Pro-

fessor exhibited the results of his numerous experiments in a tabulated form; but the details are too voluminous to be reported here.

'Proposed Theory of the Origin of the Asteroids,' by Mr. J. NASMYTH.—"As the progress of science is frequently aided by advancing hypothetical views in explanation of the cause of certain phenomena, I hazard a suggestion as to the cause of the break up of the original planet whose fragments, it has been conjectured, form that numerous and remarkable group of small planets revolving between the orbits of Mars and Jupiter; some peculiarities of whose path have led to the supposition that they must have parted company from a parent mass at the same time and place. In order to render my views on this subject more clear, I would refer to the well-known toy called a 'Prince Rupert drop'; namely, a drop of glass which has been let fall, while in a semi-fluid state, into water, by which the surface of the glass drop is caused to cool and consolidate with such rapidity that the subsequent consolidation and contraction of the interior mass induces such a high degree of tension between it and the exterior crust that the slightest vibration is sufficient to overcome the cohesion of the external crust, and by so letting free the state of tension to cause the glass drop to fly into thousands of fragments. Nor is this action confined to 'Rupert's drops'; as we have examples of the same action in our foundry apparatus, in the case of masses of brittle metal, where the exterior of the casting first consolidating (as it always does before the interior), the after contraction of the interior of the mass induces a sort of 'touch and go' state of tension, which frequently results in such castings flying into fragments in spite of their apparent strength, either *per se*, or on the application of some force otherwise totally inadequate to produce so destructive a result. Now, let us apply this action (which we find constant in the cooling of all masses of brittle material) to the case of the supposed parent planet of the asteroids. It appears to me that we shall find in such the elements of a very feasible, if not the true explanation of the origin of this remarkable and numerous group of planets,—namely, that the parent planet may have consisted of such materials as that by the rapid passing of its surface from the original molten condition to that of solidification, while the yet fluid or semi-fluid interior went on contracting by the comparatively gradual escape of its heat into space, through the solid crust, a state of tension may thereby have been induced, such as that in the 'Rupert drop,' and that the crust may have at last given way with such violence as to cause the fragments to part company, and so pass off, whirling into orbits, slightly varying from each other, according to corresponding variations in the condition of each at the instant of rupture. The remarkable fact,—that the orbits of these asteroids have one common node or point of coincidence, causes us to look to some such explanation as I have thus hazarded, and which perhaps may be entitled, meantime, to fill up a gap, until supplanted by a better explanation."

'On the Gradient of Density in saturated Vapours, and its Development as a physical Relation between Bodies of definite Chemical Constitution,' by J. J. WATERSTON.—The object of the present communication was to give a short notice of certain developments of a general law of density in saturated vapours, which the author had lately, in a paper laid before the Royal Society, collected evidence from observation to support. Density is, by him, taken to signify, not specific gravity, but the quotient of the pressure of the vapour by its temperature, reckoned from the zero of gaseous tension; the standard of temperature being that of the air-thermometer. The general law is, that the temperature and sixth root of the density of a saturated vapour form the co-ordinates of a straight line. In other words, at the same temperature, or at the same interval of temperature, any two vapours in contact with their generating liquids, have densities that are either equal, or that have a constant proportion to each other. The author gave diagrams illustrative of the application of this law to several vapours. The point of convergence of the right lines he calls nodes. He gave twenty-four distinct examples of its application to steam, alcohol, ether, and several other vapours; laid down the formulæ by which the

computations could be conducted, and pointed out the method of determining the value of the constants.

THURSDAY.

SECTION B.—CHEMICAL SCIENCE.

President—T. ANDREWS, M.D.
Vice-Presidents—Prof. APJOHN, Prof. CONSELL, Prof. FARADAY, Prof. GRAHAM.
Secretaries—Prof. HOPKINS, Prof. ROYALDS, Dr. GLADSTONE.
Committee—J. C. Boyd, J. S. Brazier, G. B. Buckton, A. Claudet, M. Delesse, Dr. J. H. Gilbert, G. Gladstone, A. Harvey, Dr. H. Head, F. M. Jennings, Prof. F. W. Johnston, A. Macdonnell, P. J. Parrall, W. B. Ritchie, W. J. Russell, J. W. Smyth, W. E. Ward, J. Wilson, R. Warrington.

'On Chemical Combination,' by Dr. T. WOOD.
The author summed up his opinions as follows:—I conceive that there is a mutual dependence or relation between the space and the matter which compose a body, such relation causing the distance between the particles to be definite; that, therefore, if the nature of the matter changes, the distance between its particles must also change; that, if two bodies be mixed or brought together, at insensible distances, as in solution, they are no longer two but one body,—and, as they were dissimilar previously to being mixed, the one body they form must be dissimilar from either separately, and so the distance between the particles must be different. It must also be less; for, if greater, the bodies could be brought nearer at sensible than insensible distances, and so could not form one body at all, which is contrary to our supposition. But, as every molecular movement is accompanied by its opposite, this lessening of distance between combining particles is attended with expansion among others, and this expansion is the heat.

'On Combinations of Metals with Oxygen,' by Dr. T. WOOD.—In this paper, and indeed in the preceding one, the author referred to his published views of the production of cold by decomposition, and especially to a paper in the *Philosophical Magazine*, for October, 1851, where he proved "that the decomposition of a compound body gives rise to as much cold as the combination of its elements produces heat."

Dr. ANDREWS at the conclusion made some observations, and said he considered it but fair to refer to his paper on a similar subject published in the *Phil. Mag.* for June, 1848, where the same discovery was announced by himself in these words:—"This assumes the truth of the principle (which I have in other enquiries endeavoured to illustrate, and is indeed almost self-evident), that when, in the course of any chemical reaction, the constituents of a compound are separated from one another, there is a quantity of heat thereby absorbed equal to that which would have been evolved if the same substances had entered into combination."

'On the Composition and Economy of the Flax Crop,' by Prof. HODGES.—A very elaborate paper, in which the Professor entered into minute details of chemical analysis—drying, breaking, scutching, and so forth, of great value to the practical man, but not of interest for our readers. We, therefore, confine ourselves to the history of flax cultivation in Ireland.—From the earliest periods, we have reason to believe that the inhabitants were acquainted with the qualities possessed by the fibre of the flax plant, for clothing. By whom, however, or from what country it was introduced, we have no satisfactory record; for the assertion made by some writers—that the Phœnicians were the instructors of the Irish people—is destitute of historical foundation. Our Irish name for flax is *Lhinn*, which word is also applied to thread, while the term *anairt* is used to express linen cloth. Dr. O'Donovan informs me that it has no cognate term in any language with which he is acquainted, and is evidently a word of great antiquity. In the Brehon laws, also, we find it enjoined that the Brughaidhs must be acquainted with the mode of working flax. The linen shirt, dyed yellow, indeed, appears to have been a national dress; and the Jesuit, Edmund Campion, speaking of the "mere" Irish, describes their fondness for capacious linen garments. "Linen shirts," he says, "the rich do wear for wantonness and bravery, with wide hanging sleeves, playted, thirtie yards are little enough for one of them." The importance of flax cultivation in Ireland appears to have been recognized by the English Government, as may be found from the number of legislative enactments and grants for its encouragement. In 1809, Govern-

ment appropriated the sum of 20,000*l.* for this purpose. The exertions of several national Societies have also been directed to the promotion of flax cultivation; the labours of the Royal Dublin Society were early excited in improving the management of this crop. Since the establishment, in 1841, of the Royal Flax Improvement Society, an association of proprietors and manufacturers which was originated and holds its meetings in Belfast, there has been expended, of money collected by subscriptions from members, 8,000*l.*, and of money granted by the Government to the Society for the Promotion of Flax Cultivation in the south and west of Ireland, 4,000*l.* Yet, notwithstanding the efforts which have been made by Governments and Societies to stimulate the culture of flax, and though the total extent of the crop produced last year was estimated by the Government Commission as equal to 138,619 acres, the value of which would be about 1,700,000*l.*, this produce is only about a fourth of that annually required by the rapidly increasing manufactures of the United Kingdom. Though flax is to be found in cultivation in almost every part of Ireland, yet it is in Ulster that its chief development is to be found. Of the 138,619 acres of flax grown in 1851, only 14,893 acres were beyond the bounds of this province. It is in Ulster also that the chief seats of its manufacture are to be found.

FRIDAY.

'Report on the Influence of the Solar Radiation on the Vital Powers of Plants growing under different Atmospheric Conditions,' by Dr. J. H. GLADSTONE.—As a preliminary matter of inquiry, the mere effect of coloured media in accelerating or retarding the growth of various kinds of plants was tried. Hyacinths were chosen as the sample of bulbous-rooted plants. Roots of as nearly as possible the same size and description in every respect were grown under the various bell-glasses. Certain differences were described, both in the rootlets and the leaves, which might fairly be attributed to the character of the light; the time of flowering, and the flowers themselves, were not affected by it; and the greatest growth (estimated quantitatively in each instance) took place in the plant exposed to all the rays of the solar spectrum; the next greatest was under the blue glass. Wheat was also grown in a similar manner; the method of arrangement of apparatus being minutely detailed, and the character of the corn-plants which appeared under the various glasses. Those under the yellow were the most sturdy in their growth; those under the blue the least healthy; whilst some grown under a nearly darkened shade grew quickly nine inches long, put forth no secondary leaves, and died in a month. Mallows were grown in a similar manner. The detailed observations were to much the same purport as in the preceding instance. As it had been formerly observed by the author and his brother, that plants kept in an unchanged atmosphere appear to enter into a sort of lethargic condition, experiments were instituted for the purpose of ascertaining whether the alteration in light produced by coloured media made any marked variation in this matter. The pansy and the *Poa annua* were the plants selected; and comparative experiments were made with a darkened shade, and with no covering at all. The results were various,—but scarcely conclusive, unless in reference to the fact that plants survive much longer for being in unchanged air. The colourless and yellow media appeared most favourable to the healthiness of the plants. As experiments on growing plants must stretch over a considerable time, the author's observations were not put forth as foundations for any generalization, but just as samples of his preliminary attempts.

'Analysis of a Substance resembling the Pigolite of Prof. Johnston.'—Prof. APJOHN stated, as the result of his analysis, that it was composed of two equivalents of an organic acid, with one aluminous base. From his experiments, it appeared to be identical with the pigolite of Prof. Johnston, of Durham.

'On the Application of Polarized Light to the Discovery of Minute Quantities of Soda,' by Dr. ANDREWS.

'On a New Variety of Magnetic Iron Ore, with Remarks on the Application of Bi-carbonate of

Baryta to Quantitative Analysis,' by Dr. ANDREWS.

'On the Atomic Weights of Platinum and Barium,' by Dr. ANDREWS.—No determination of the atomic weight of platinum having been made since the recent revision of atomic weights, and the number adopted by chemists for that metal resting on the authority of a single experiment of Berzelius, the author considered it of importance on practical as well as theoretical grounds to institute some new experiments on the subject. The salt of platinum selected was the double chloride of potassium and platinum; which, after being dried in vacuo, at a temperature of 105° C., was decomposed by digestion with metallic zinc and a small quantity of water, the action being assisted by the application of heat towards the end of the process. After the complete precipitation of the platinum and the formation of chloride of zinc from the decomposition of the double salt, the excess of zinc was removed by the addition, first, of acetic, and subsequently, of nitric acid. The precipitated platinum was then removed by means of a small and carefully washed filter, and the amount of chlorine in the solution of chloride of zinc ascertained by Gay-Lussac's process, which has been of late so successfully applied by Pelouze to the determination of several other atomic weights. The double chloride of potassium and platinum was found to retain $\frac{1}{1000}$ ths of its weight of moisture, even when dried at a temperature considerably superior to the boiling-point of water. In three experiments performed by this process, the numbers obtained were 98.93, 98.84, and 99.06; the mean number 98.94 expresses, therefore, the atomic weight of platinum.—For the atomic weight of barium, the author obtained from two closely accordant experiments the number 68.789; and concluded with some general observations as to the importance of a systematic series of experiments to settle, if possible, definitively whether the law of Prout, that the atomic weights of all bodies are multiples of that of hydrogen, be universally true. He concluded by reading an interesting extract from a letter which he had received from Baron Liebig.—"It is not certain that Prout's law may not be true for oxygen, nitrogen, and carbon, without its being necessary to assume, as a consequence, that other bodies behave similarly,—that is, that their atomic weight must be exactly multiples by whole numbers of the atomic weight of hydrogen. The law is certainly not true of all bodies, but it may be true of certain groups, whose members, in respect to atomic weight, stand in a simple numerical relation to each other. The atomic weights of silicon, cobalt, strontium, tin, arsenic, and lead, are in the same ratio as the numbers 1:2:3:4:5:7. We do not see the necessity of this relation, but only the possibility. Why should fractional numbers only occur, and not whole numbers also? I consider these relations only as facts; the law of the numbers themselves is quite unknown to us,—as unknown as the absolute weights of the atoms."

THURSDAY.

SECTION C.—GEOLOGY AND PHYSICAL GEOGRAPHY.

President—Lieut.-Col. PORTLOCK.
Vice-Presidents—Dr. GRIFFITH, Rev. Prof. SEDGWICK, Sir H. T. DE LA BECHE, J. SMITH.
Secretaries—J. BRYCE, J. MACADAM, Prof. McCOT, Prof. NICOL.
Committees—Dr. APJOHN, F. W. BINNEY, Dr. BLACK, J. S. BOWERBANK, Prof. E. FORBES, J. GRAINGER, C. HAMILTON, R. HARKNESS, W. HENNESSY, F. M. JENNINGS, J. B. JUKES, J. KELLY, Prof. KING, A. LIDDELL, C. MACLEOD, R. MALLAT, Sir R. J. MURCHISON, G. W. ORMEROD, Prof. PHILLIPS, Rev. Dr. S. SMITH, M. DE TCHINATCHOFF, M. DE VERNEUIL, J. WILSON.

THE PRESIDENT stated, that the proceedings would commence by the exhibition of the new Geological Map of Ireland, prepared by Mr. Griffith under the British Association.

Mr. GRIFFITH then directed attention to the map, and to the improvements which he had been enabled to make on it since 1838, acknowledging with thanks the services rendered to him by Colonel Fordyce, and Messrs. Bryce and MacAdam. On looking at the map, it will be found, he said, that the conformation of Ireland is peculiar, the coast being mountainous and the interior flat. Taking the line from Dublin to Galway, which is 120 miles, the summit level is seen to be only 160 feet above the level of the sea; hence it is that our canals and

railways have been made at an expense so comparatively trifling. Lough Allan, which may be considered the source of the Shannon, is 160 feet above the level of the sea; while between Killaloe and the tide water at Limerick, a distance of about twelve miles, the fall is only 110 feet. The average fall is less than six inches to the mile,—a circumstance to which we are to attribute so many sluggish rivers, and the existence of large tracts of country flooded during six or nine months in the year. The mountain ranges which indicate the strata of Ireland run in the north from north-west to south-east, and in the county of Cork from nearly east to west. Beginning with the foundation and going to the top, it may be said that the mica slate, which forms the basis of all the sedimentary rocks of Ireland, occurs in abundance in the counties of Londonderry and Donegal, where it is found twisted and contorted in every direction by the protrusion of the granite. Mr. Griffith next alluded to the stratifications in the counties of Mayo and Galway, which, he remarked, were chiefly composed of mica slate, granite rock, and limestone. Granite also occurs to the north of Galway Bay, where it is succeeded by metamorphic rocks and mica slate. To the north of the grand boundary several granite rocks occur, protruding through the mica slate and limestones. In this district there appears the green marble, which is only limestone metamorphosed by the action of the granite. Passing northward, the mica slate is found covered by Silurian rocks. These rocks contain numerous fossils belonging to the Silurian system, and are succeeded by enormous masses of conglomerate, containing large pebbles of grey granite, some of them nearly a ton in weight, and perfectly rounded. The granite thus observed is quite distinct in its character from the granite of the district, and clearly enough belongs to an older period. The thickness of the Silurian strata, including the conglomerate, may be set down at about 5,000 feet. The speaker next alluded to the slates and Silurian ranges of the promontory at Dingle, in the county of Kerry, and described similar formations in the counties of Waterford, Wexford, and Wicklow. To the north of Dublin there is another slate district, similar in character to that of Wicklow and Wexford, and probably belonging to a lower Silurian series, though, as no fossils have been discovered in it except at the south portion, its exact age remains undetermined. This is accompanied with the granite at the Mourne Mountains, which Mr. Griffith conceives to be newer than the slate. One of the most interesting Silurian districts in Ireland occurs near Pomeroy, in the county of Tyrone. Mr. Griffith next described the Old Red Sandstone, particularly alluding to the large district which occurs in the county of Tyrone, and which, apparently, has some relation to the Silurian district at Pomeroy; and then pointed out on the map several mountain ranges which are capped by the deposit, particularly the Galtees and Knockmeledown mountains, Slieveish, in the west of Kerry, and districts north of the county of Cork. Mr. Griffith remarked that the Old Red Sandstone is succeeded by the great mountain limestone district of Ireland, which occupies two-thirds of the entire country. The carboniferous limestone series, he observed, is altogether about 6,000 feet thick, 3,000 feet of which belongs to the lower portion of the series, and 3,000 to the upper. He next described the several coal districts of Ireland, commencing with Ballycastle, at Fair Head, on the north coast of the county of Antrim. This district, which is of greater antiquity than any other in Ireland, had, he remarked, been worked to a considerable extent. The coal was worked by tunnels, and the beds, which were affected at different elevations by the protrusion of dykes of greenstone, have been nearly worked out, though at Murlough Bay, which contains bituminous coal, or stone coal, there are some beds, whether exhausted or not he had not information to enable him to say. The next coal district is that situated near Coalisland, in the county of Tyrone. It is very small, and the beds are now nearly all worked out. A third occurs in Leitrim, Cavan, and Roscommon, stretching to Lough Island, which contains only one bed, not exceeding two feet in thickness, though in this locality there is the site of the Arigna iron works, which, though they are not worked at the present time, formerly attracted much attention in this country.

The shale accompanies the coal with rich beds of argillaceous ironstone, some of it containing so much as 40 per cent. of iron,—indeed, the iron that was made at Arigna was found to be of very superior quality. Mr. Griffith next described the Kilkenny coal district, which contains, he said, an unflaming coal, or mineral charcoal alone. There are several beds in this district, two of which are three feet in thickness, one four feet, and two less than three feet. The upper beds have been long since worked out; the lower ones still remain, though they are so impure in quality, and contain so much sulphur, that they are not used except to burn limestone. The Munster coal district was next dwelt upon. It occupies a considerable portion of Clare, Limerick, Cork, and Kerry, and contains three beds, some of which are not more than six inches in thickness. The most valuable portion is found at the South, immediately to the north of the river Blackwater, where several excellent beds of anthracite occur. The learned gentleman having remarked that he would not say that a valuable coal bed would not be found in Ireland, though he believed that no such coal would be had in the country as is to be found in England, proceeded to the New Red Sandstone. The New Red Sandstone, he said, is very sparingly developed in Ireland. The most southern locality in which it is found is at Carrickmacross, in the county of Monaghan,—where, in sinking through it to obtain coal, a bed of gypsum, forty feet in thickness, was discovered; and the districts in which it is found most extensively are in the counties of Tyrone and Antrim. In Tyrone, it adjoins the coal district, and rests upon it. It also occurs in the valleys of the river Lagan, in the counties of Down and Antrim, continues under Belfast, and again displays itself at Carrickfergus. The strata contain gypsum in thinner beds, however, than those mentioned as occurring at Carrickmacross. Some time ago, when sinking through it to obtain coal, a bed of salt was discovered. The New Red Sandstone is covered by the lias, which is similar to that in England, and this again by the chalk, which in the North of Ireland is called white limestone, owing to being more dense than the chalk found in England. The chalk is covered by tabular trap, which occupies a large portion of the counties of Antrim and Derry. Mr. Griffith next explained the position of the tertiary beds, remarking that an interesting tertiary district occurs in the south side of Lough Neagh, in the counties of Tyrone and Down. It is ten miles in length and four in breadth; a bore was made through it, to the depth of 300 feet, with a view to obtain coal, and the strata were found to consist of alternations of white ironstone and blue clay, with surlurbrand, or wood coal,—a series similar to that at Bovey, in Devonshire. The level of the bore, which was situated not far from the coal-field, and adjoined the coal district, was about 70 feet above the level of the sea; and, as the boring itself was 300 feet deep, the depth of the series was 230 feet below the level of the sea, though even at this distance it was not penetrated. Mr. Griffith next alluded to the tertiary districts situated on the coasts of the counties of Wicklow, Wexford, and Waterford, and concluded by a view of the eskar hills and diluvial gravel which cover so large a portion of Ireland, and which appeared to him to have been produced by currents setting in from the north-west towards the south-east.—The President observed, that a point of great interest referred to by Mr. Griffith was, the scarcity of coal. Here was a matter in which geology was of vast importance, as it was desirable at once that the geologist should point out where to obtain valuable minerals, and that he should exercise a wise discretion in preventing others expending time and money in investigations where these properties are not to be expected. It was clear by Mr. Griffith's statement that coal is not to be found in any quantity in Ireland; and therefore every attempt to leave that impression, and to induce parties to embark in speculations which must prove fruitless, ought to be discouraged.

'On the Rocks of the Upper Punjab,' by Dr. A. FLEMING.—Sir R. I. Murchison explained briefly the nature and value of the last researches of Dr. Fleming, the geologist, to whom the East India Company have assigned the task of directing the working of the important salt mines of the Upper Punjab. The chief results are, that ancient depo-

sits of the age of the Old Red Sandstone and carboniferous limestone (rocks never before observed in India) support secondary and tertiary rocks, and that the salt is subordinate to the Old Red Sandstone.

'On the Geology of St. Ives, Huntingdonshire,' by Mr. J. K. WATTS.

'On the Mines of Copiapo,' by Col. LLOYD. FRIDAY.

'On the Fossils of the Lower Silurian Rocks of Scotland,' by Mr. HARKNESS.

'On the Structure of the South Silurian Mountains of Scotland,' by Prof. NICHOLL.

'On the Structure of certain Fossil Fishes, found in the Old Red Sandstone of the North of Scotland,' by Prof. McCOR.—The Professor exhibited specimens and plates; among others, a large species of *Holoptichius*, which he named *H. Sedgwicki*, showing the form, number, and position of the vertical fins of that genus. He also dwelt on the anatomical structure and peculiarities in the form of the tail, and the ossification of the vertebral column, which had been supposed to characterize the fishes found in the more ancient rocks, and which had been used by some recent writers in support of the doctrine of "Progressive Development." He pointed out that the structure of the fossils which he treated of disproved these notions, and strengthened the more ordinary geological laws. He described the peculiarities of two new genera, which united the two great groups of *Sauropterygia* and *Coleocephali*.

'On the Eskars of the central part of Ireland,' by Mr. R. YOUNG.—After describing the peculiar character of the country between Dublin and Galway, the absence of mountain chains, the sluggish character of the streams, the immense tracts of bogs, the numerous gravel pits, and the enormous stretch of carboniferous or mountain limestone, Mr. Young went on specially to discuss the phenomena invariably associated with the district—gravel, diluvium, and bogs. Like Mr. Griffith, he attributed the growth of the bogs to the gravel hills, which acted as barriers to the free discharge of the drainage from the land, and caused in some cases extensive lakes, of which we have many evidences in the marl beds and shallow lands along the Shannon, Suck, Bruma, &c. He divided the diluvial ridges of the country under two distinctive forms: 1st, the gravel hills, which, he said, are sometimes confounded with eskars, from their bearing at times a resemblance in form and composition, though their character is distinct,—and which seem to have been thrown down from agitated water, as there is little appearance of stratification; and, secondly, the eskars proper—well defined, narrow ridges of pure gravel or blue water gravel—which, when not washed through by pent-up waters, can be distinctly traced, many of them for 20 or 30 miles, and which, when they traverse a flat country, bear a striking resemblance to a railway embankment. They are invariably found to consist of water-worn limestone gravel, boulders both of limestone and sandstone, also much worn, and sand without clay. The larger boulders are generally arranged in a bed at the bottom of the ridge, the interstices often filled up with a marly stalagmite, the gravel and sandbeds lying above them. Mr. Young then described some peculiarities with regard to the form and direction of the eskars; and concluded by giving it as his opinion, that the drift had its origin in the sea currents and eddies,—at the same time pointing out on a map which he has constructed the probable direction of the currents across the depressed tract between Galway and Dublin.

'On the Discovery of a Fossil Mastodon in the Tertiary Beds of the Arno, in Tuscany,' by Prof. SAVI. The paper, which was in Italian, was submitted by Sir R. I. Murchison. The fossil was similar to those already known.

THURSDAY.

SECTION D.—ZOOLOGY AND BOTANY, INCLUDING PHYSIOLOGY.

President—W. GILBY.

Vice-Presidents—Prof. ALLMAN, Prof. WALKER, ARNOTT, Dr. R. BALL, Prof. E. FORBES, Prof. BALFOUR, Prof. OWEN. Secretaries—G. C. HENDERSON, Dr. E. LANKFESTER, Dr. DUCKIE. Committee—Dr. R. C. ALEXANDER, C. C. RABINGTON, Dr. BENDER, J. S. BOWENBANK, Prof. BARDEN, Dr. FRASER, Dr. CARLISLE, M. CONNELL, Dr. CURDIE, Prof. FERGUSON, Dr. FOWLER, Dr. GILSON, Prof. GORDON, Rev. Prof. HINCKES, Rev. Dr. HINCKES, T. H. HUXLEY, Prof. MCCOY, Dr. MACKAY, Major MURDO, R. PATTERSON, Dr. REDFERN, Lovell REEVE, Prof. ROYLE, Dr. STANGER.

Oct. Stretcher, Lieut.-Col. Sykes, W. Thompson, J. Wilson, J. E. W. Thompson.

The PRESIDENT, before announcing the first paper, adverted to the decease of the late William Thompson, of Belfast; and concluded by moving a resolution to the effect that the Section desired to put on record their deep regret at the loss which science and humanity have sustained by the sudden and premature death of this distinguished naturalist.

'On the Altitudinal Ranges of Plants in the North of Ireland,' by Prof. DICKIE, M.D.—The observations were made on Slieve Donard, in County Down, attaining an elevation of 2,796 feet; Muckish and Enigul, in County Donegal, the height of the former being 2,190 feet, of the latter 2,450 feet; and Nephin, in the north-west of County Mayo, its elevation being 2,639 feet. It might have been expected that in general the species noted would have the upper and lower limits of each respectively obeying the usually understood law. Instead of which, it appears that their natural upper limits are, with a very few exceptions, lower in the North of Ireland than in North Britain. The lowest limits of plants usually found at high elevations were next examined, and those of twenty species in Ireland compared with their recorded lowest limits in different parts of North Britain; from which comparison it appears that the lower limits in Ireland are generally much lower than in North Britain. In may be stated, in other words that in Ireland, with a climate which is generally mild, plants usually growing in low grounds do not rise so high upon the mountains as in North Britain with a less favourable climate; and plants usually growing at high elevations descend lower in Ireland than in many parts of North Britain.

Prof. BALFOUR had often observed a considerable descent of alpine plants. *Draba incana* he had found on the sea-shore. *Saxifraga oppositifolia* was found very low near Glasgow.—Prof. WALKER ASHOTT mentioned several instances of alpine plants descending to the sea-shore, as *Saxifraga aizoides*. He thought those plants descended which grew in the vicinity of streams, and would divide alpine plants into dry and moist. There was a considerable difference in the distribution of plants according as they grew on continents or islands.—Mr. L. KEEVE observed, that the lines of distribution of many of the plants referred to by Prof. Dickie corresponded with the isothermal lines of Humboldt.

—The PRINCE OF CANINO thought it of first importance to distinguish between dry and wet alpine plants. In investigations on the distribution of plants care should be taken to take into consideration the physical properties of the soil.—Mr. WYVILLE THOMSON had found alpine plants at the mouth of the River Dee, but not in its course. He thought this was due to the sea supplying the warmth low down which the snow did higher up. Neither snow nor sea protecting the plant in the middle parts of the river's course.

'On a Peculiar Phase in the Development of an Annelid,' by Prof. ALLMAN.—While examining, by means of a towing net, the surface of the sea in Kinsale harbour, during a hot day in July last, a number of minute annelidous animals were captured in the net. They were about two lines in length when extended; and on being transferred into a phial of sea-water they swam about with great activity, but with a motion different from that of other swimming annelids, and effected by a peculiar and highly developed ciliated apparatus. These annelids were then minutely described.

'Supplementary Report on the Fauna of Ireland,' by the late Mr. William Thompson, read by Mr. R. PATTERSON.—The remaining volumes of the 'Natural History of Ireland' being in course of preparation for the press, the present communication was confined to an enumeration of the several species of animals now recorded as Irish, but which had not been made known at the date of the publication of Mr. Thompson's previous reports. The additional species comprised in this supplement are, in number, nearly as follows, viz.:—Vertebrate animals, 40; invertebrate animals of various orders, 195—total number of additions, 235.

'On the Freshwater Fishes of Ulster,' as enumerated in the MSS. of the late Mr. William Thompson, read by Mr. R. PATTERSON.—The several species of fish which inhabit purely fresh water for at least a portion of the year, and which Mr. Thomp-

son has noted as having been found in the province of Ulster, were enumerated. The catalogue contained 25 distinct species, in addition to two which have been introduced to ponds, &c., but which Mr. Thompson did not consider indigenous to this locality.

'Remarks on a species of *Sepiolo*, new to Britain, and first procured in the Neighbourhood of Belfast,' communicated by Prof. E. FORBES.—One species only has hitherto been recognized in the British seas, and this has always been identified by our naturalists with the common *Sepiolo* of the Mediterranean. Gervais and Van Beneden, in 1838, maintained that the *Sepiolo* of the Atlantic coasts of Europe was different from that inhabiting the Mediterranean. The distinctions indicated by them, however, were quite insufficient to warrant the inference drawn by these observers. M. A. D'Orbigny was the first to determine a true and important difference, but likewise committed the error of supposing that all the Atlantic individuals were of one type and the Mediterranean ones of another. He consequently referred all the figures and descriptions of British and Channel *Sepiolo* to his *S. Atlantica* (those of Pennant, Bouchard, Gervais and Van Beneden, and Thompson), and those of Mediterranean individuals to *S. Rondeletii*. It will be seen that we have both these species in the British seas. Owing to the distinctive characters having been entirely overlooked, it is impossible now to say which kind was intended by British authors who quote this cuttle-fish under the names of *Loligo sepiola*, *Sepiolo vulgaris*, and *S. Rondeletii*. Under these circumstances, we think it best to restrict our synonyms and not include doubtful references.—1. *S. Atlantica*, D'Orbigny.—Suckers becoming suddenly four-ranked, crowded, and very minute at the extremities of the lower pair of arms. Respecting this species, Mr. Alder writes as follows from the Menai Straits:—"Miss Hughes has supplied me with three specimens of different sizes. This is an odd fish, crouching generally at the bottom like a toad, with its great goggle-eyes half closed, and sometimes crawling along by means of its suckers, puffing the water through the funnel all the time. When it does take to swimming it darts very quickly through the water, and is difficult to catch. When taken out of the water and placed on the hand, it had recourse to an odd mode of progression, turning two or three somersaults in regular tumbler-fashion; first laying hold with its arms, turning over, and laying hold again until it managed to get back into the water. In this species, too, the tentacular arms generally lie concealed within the others."—Dr. Johnston remarks of it that—"although kept alive in a basin of sea-water for about twelve hours, and repeatedly irritated, it never ejected any inky fluid, with which it is, nevertheless, amply provided." It is probable, as has already been remarked, that the majority of British localities of *Sepiolo* relate to this species. Whether Pennant's *Sepiolo sepiola* from the coast of Flintshire was it, it is impossible now to say. We have taken it in the Irish Sea; in fifteen, eighteen, and twenty fathoms, among the Hebrides, and in seven fathoms in the Sound of Skye. Mr. Alder has found it on the coast of Northumberland, and in the Menai Straits: also at Torbay. The week before Mr. Thompson, of Belfast, died, he submitted to our examination two specimens of *Sepiolo* as possibly distinct. His sagacity did not deceive him in this, any more than in many other similar instances; for one of these little cuttle-fishes taken at Bangor, in Ireland, in 1839, by Dr. Drummond, proved to be *S. Atlantica*, and the other was an Irish example of the true *Sepiolo Rondeletii*. The statistics of the distribution of the two species have yet to be made out.—2. *S. Rondeletii*, Leach.—Suckers on the lower pair of arms similar to those on the others.—I may remark respecting the British cuttle-fishes: 1. That the *Rossia Jacobi* has proved to be identical with *Rossia macrozona*. 2. That among Dr. Ball's specimens of Irish cuttle-fishes, a form noted by him as probably distinct from *Loligo media* is apparently the *Loligo marmorata* of Verany. 3. That the true *Onnatrephes sagittatus* has been taken during the past winter at Brighton, by the Marchioness of Hastings, and at Folkestone, by Mr. Mackie. The specimens usually so scarce have been shown by Mr. Alder and Mr. Hancock to be the *Onnatrephes tovarius*.

Dr. LANKESTER read the Report of the Committee

on the Registration of the periodic Phenomena of Animal and Vegetable Life, and stated that two sets of tables only had been filled up of those which had been sent out by the Association. Those sent in were, from Miss Llewellyn, of Penllegare, near Swansea, and from Mr. Matthew Moggridge, of Swansea.

FRIDAY.

'Morphological Analogy between the Disposition of the Branches of Exogenous Plants and the Venation of their Leaves,' by Prof. M'COSH.—The author said that the view which he took of the morphology of the plant might be regarded as an extension, in the same direction, of the theory of Goethe. According to this theory, all the appendages of the axis of the plant, including leaves, bracts, sepals, petals, stamens, &c., are formed on a common plan, of which the leaf may be taken as the type. It had occurred to him (Dr. M'Cosh) that we may regard the branches of the plant and the whole plant as formed on the same plan. We may thus regard the plant as constructed on one model throughout. Speaking in this paper of reticulated leaved plants, he showed that there is a correspondence between the disposition of the branches along the axis and the distribution of the venation of the leaf:—(1) In some plants the lateral branches are disposed pretty equally along the axis, whereas, in others, a number are gathered together at one point, and the plant becomes, in consequence, verticillate or whorled. Now, he found that wherever the branches are whorled, the leaves of the plant, as in the rhododendron, or the veins of the individual leaf, as in the common sycamore and laurumn, are also whorled. (2) He showed, further, that when the leaf has a petiole, the tree has its trunk unbranched to near the base (as in the case of the sycamore, apple, &c.), and when the leaf has no petiole the trunk is branched from the root, as in our common ornamental lawn shrubs—the bay laurel, holly, box, &c. (3) He showed, further, that the angle at which the branches go off from the axis is the same as that at which the side veins go off from the main veins. His observations during the past summer had been chiefly directed to this point, and he made the measurements by means of a graduated circle with a moveable index. In these measurements he took the angle formed by the main lateral branches with the axis, and by the main lateral veins with the midrib. The angle of the veins of the leaf is easily taken. It is more difficult to determine the natural angle of the branches, inasmuch as the direction of the branch may be modified by a variety of circumstances, as by winds, its own weight, &c. Still there is evidently a normal angle for each species of plant, which may be ascertained by taking the average of a number of measurements of a freely growing plant. He had measured in all about 210 species of plants, and found the angle of the branch and of the vein to correspond. He produced a tabulated statement of these 210 plants, and called the special attention of the Section to several of them.

'The Black and Green Teas of Commerce,' by Dr. ROYLE.—It was a remarkable fact, that the subject of the difference between the black and green teas had been, until recently, a matter of great uncertainty. The Jesuits, who had penetrated into China, and Mr. Pigou, were of opinion that both the black and green teas were produced from the same plant; while Mr. Reeve believed that they were manufactured from two distinct plants. Now, as regarded himself, he (Dr. Royle) had adopted the view that the best kinds of black and green tea were made from different plants; and examination of tea samples seemed to confirm that view, but a repetition of the experiment had not done so. Mr. Fortune subsequent to the China war, having been sent out to China by the Horticultural Society of England, made inquiries on the subject. He there found the *thea bohea* in the Southern parts of China employed for making black tea; and in proceeding as far north as Shanghai, he found the *thea viridis* used in making green tea near the districts where the best green tea was made. So far, therefore, the information obtained seemed to confirm the view of two different species of *thea* being employed to make the two different kinds of tea; but Mr. Fortune, in visiting the district of Fokien, was surprised to find what he conceived to be the true *thea viridis* employed in making black tea in districts near where

the best black tea was made. He took plants with him from Fokien to Shanghai, and could find no difference between them. It was still, however, desirable to get specimens from the district, where the black and green teas of commerce were actually made, and this had latterly been effected. In consequence of the great success which had attended the experimental culture of tea in the nurseries established in the Himalayas, Mr. Fortune was again sent to China by the East India Company. He proceeded to the northern parts of the country, in order to obtain tea seeds and plants of the best description, as the most likely to stand the Himalaya climate. Mr. Fortune procured seeds and plants in great numbers, and sent them to the Himalayas, where they had been since cultivated. When he had reached Calcutta, the tea manufacturers whom he had brought with him made from plants in the Botanic Gardens their black and green tea from the same specimens; so that it was evident it was the process of manufacture, and not the plant itself, that produced the green tea. All now who were acquainted with the difference between black and green teas knew that they could be prepared from the same plant without the assistance of any extraneous materials, though it was a common thing for manufacturers to use indigo, Prussian blue, tumeric, &c., in colouring the tea. Dr. Royle showed specimens of the Black Tea plant from the Woo-e-Shan, and of the Green Tea plant from the Hwuychou districts. No specific difference could be observed between the two specimens.

'Notes on the Distribution and Habits of *Echinus lividus*,' by Prof. DICKIE.—This species presents a more extensive range in Ireland than has been hitherto supposed. Its most northern point on the west coast, alluded to in Prof. E. Forbes's work, is Bundoran. Mr. Hyndman has since found it at Tory Island. In 1851, Rev. M. Gallagher discovered it some miles to the east of Dunfanaghy, and Dr. Dickie observed it some distance east from Malin Head, the most northern point of Ireland. The power of excavating moderately hard rocks is a remarkable habit of this species, the animal forming a cup-like cavity in which it nestles; the means by which this is effected has not been hitherto satisfactorily explained.

Dr. HAMILTON read a paper 'On the Lobos Islands.'—Along the sea-board of Peru and Bolivia, within the Tropic of Capricorn, countless numbers of aquatic fowls exist, which live on fish, and whose excretions are exceedingly fertilizing. In some localities, the number of guanacs is enormous, so that when alarmed by discharges of fire-arms, or otherwise, they rise from their nesting places in such masses as cannot be supposed by those who have never seen these birds darkening the air like a cloud. Guano producers change their habitation when continuously disturbed, but they do not permanently leave a locality which has long been frequented by them, in consequence of a temporary alarm; for, in such a case, they soon return to their old haunts, and totally abandon them only when teased by lasting annoyances. The ocean on the west coast of South America within the tropic, teems with fish, the quantity seeming exhaustless, and guanacs equally abundant; so that their eggs are gradually accumulating somewhere either on or off that desert land, and now has become an object sought after, not only by the Peruvian mountaineer, but by the merchant, shipowner, and statesman."

THURSDAY.

SECTION E.—GEOGRAPHY AND ETHNOLOGY.

President.—Col. CHESNEY.

Vice-Presidents.—Rev. Dr. E. HINCKES, Major LARCOM, Sir R. I. MERCHISON.

Secretaries.—R. CULL, R. MACADAM, N. SHAW, M.D. Committee.—The Archbishop of Dublin, Capt. Allen, R.N., Rev. W. Bruce, C. Wentworth Dilke, J. Gratian, Dr. A. Hume, F. Hindmarsh, J. B. Jones, Dr. Lee, Prof. Macdonald, Dr. Moore, J. J. Murphy, Lieut. Macleod, Dr. McGee, J. G. Price, Rear-Admiral Sir J. Ross, W. Spence, Col. Sykes, Col. Sabine, W. D. Saul, Dr. Strangor, M. Pierre Teilhardier, J. E. Winterbottom.

'On the Ancient Harbour of Seleucia in Persia, near the Mouth of the River Orontes, North Syria, with some Suggestions as to the Means by which it might be restored to Use,' by Capt. W. ALLEN, R.N.—The harbour of Seleucia, was composed of an outer port of small dimensions communicating with an inner basin, probably by means of locks; and of a magnificent culvert, of about 1,200 yards in length,

cut through a mountain, having two tunnels of 21 feet aperture, and of some open cuttings, one of which is no less than 150 feet at one end, in its vertical section; but declining with the surface of the mountain, so that in some parts, the outer side of the culvert had to be formed of masonry. The purpose of this culvert was doubtless to feed the basin, and to keep it and the outer ports free from filth. The outer port formed by piers of massive stones, has become useless and filled up by neglect. The basin is 2,000 feet in length by 1,250 in breadth, containing about 47 acres. It was excavated, and all but one side of it is bounded by rising ground. The western side is bounded by a noble wall, partly dilapidated; but by repairing this wall, and raising it to the height required, the basin could be filled by a perennial stream, which runs through it, to any depth; and by raising its immense volume as a "back-water," the canal of communication between it and the outer port, and the clearing of the latter might be effected at small cost. By repairing the dilapidated walls of the great culvert, it would greatly aid in these operations, as, with small exceptions, that fine cutting is perfect. The piers of the outer port will have to be constructed anew; but there would then be a magnificent harbour, capable of containing a vast amount of shipping; situated at a part of the dangerous coast of Syria most requiring one, and affording an outlet to some of the most fertile countries in the world, in a line with the shortest route to India, namely, that surveyed and proposed by Col. Chesney, R.E. If this harbour could be restored to commerce it would be of immense benefit, not only to England, but to Turkey, by giving prosperity to some of its finest provinces, which now languish though possessing in abundance the advantages which the most unrivalled fertility can afford, in the plains of Mesopotamia, the valleys of the Orontes, Euphrates, &c.—which formerly supported many splendid cities. This port would also, with the navigation of the Euphrates and Tigris, be the outlet of great part of the commerce of Persia.

'On the Ethnological Bearing of the Recent Discoveries in connexion with the Assyrian Inscriptions,' by Dr. E. HINCKES.—This paper has not sufficient general interest for our readers to be reported at length; but Dr. Hincks observed, that the facts recorded in the Assyrian inscriptions are of more importance than those in the Egyptian, because they are not clouded as the latter are by ignorance in respect to their chronology or geography. The chronology of the period to which the most important Egyptian inscriptions and papyri belong is still a subject of controversy; while it was stated that the commencements of the reigns of Sargon and Sennacherib were as certain as those of any of the Lagide or of the Cæsars. Dr. Hincks had announced in a paper recently read before the Royal Irish Academy, that the first twelve years of Sargon corresponded with the twelve years assigned in the Canon of Ptolemy to Mardokempad, which name is a corruption of that of Marduk Baladan. In the course of July, he had identified the three years of the Belibus of the Canon (Belib) with the second, third, and fourth of Sennacherib. It followed from this that the reign of Sargon lasted eighteen years, and that the first interregnum of the Canon, which occupied two years, is to be referred to the last year of Sargon, and the first of Sennacherib. Sargon's reign began in 721 B.C.; Sennacherib's in 703 B.C. Marduk Baladan was three times conquered; first by Sargon, in 710; secondly, by Sennacherib, in 703; and thirdly, by the same king, in 700. On the first occasion, Sargon added Mesopotamia to his kingdom; on the second, Sennacherib gave it to Belibus; and on the third, he made his son Assuradad king of Mesopotamia and Chaldaea, which last country had been left to Marduk Baladan on the two former occasions. Dr. Hincks identified this name with the Aparanadius, which is the name of the successor of Belibus in the best MS. of the Canon of Ptolemy, which is, however, not an ancient one; the Greek β being a mistake for α , which might easily have been occasioned by the similarity of these letters. Reasons were given why the geography of the Assyrian inscriptions was capable of being better determined than of the hieroglyphic ones; namely, that the Egyptian could only go in one direction to Asiatic countries, whereas the Assyrians made ex-

peditions in all directions; and the direction in which an unknown country lay could generally be determined by that of other countries noticed along with it, if, indeed, it was not expressly pointed out by the King's saying that he went to it over the Euphrates or the Zab. Dr. Hincks concluded by treating at length of the great ethnological fact respecting Assyria—its language.

Other papers read were, 'On the Geographical Distribution of Common Salt,' by W. BOLLART, Esq.; 'Description of a Samoed Family,' by J. W. GILES, Esq.; and 'On the Aurora Borealis,' by Sir JOHN ROSS.

FRIDAY.

'On a Railroad through Asia Minor,' by Mr. W. F. AINSWORTH, which, in the absence of the author, was read by the President.—The paper, after describing the route intended to be taken, and remarking on the engineering difficulties and facilities on the way, proposed to connect Constantinople with its Asiatic suburbs by means of a floating viaduct, or tunnel, such as they have in Wales at present. The author considered that, in the event of this great undertaking being attempted to be carried out, the better route through Asia Minor would be along the coast of the Sea of Marmora, rather than, as some scientific gentlemen had recommended, through the mountains of the interior of Anatolia, which Mr. Ainsworth considers it would be next to impossible to surmount. The Turks, who just now are very much alive to the great importance of commerce, are engaged in opening a great commercial road from a port on the Black Sea to Sivaze—a town in the centre of Asia Minor,—and Mr. Ainsworth considered that the completion of this undertaking would be one of the greatest inducements to the commencement of the projected railway. Throughout the land route, only in one instance was it necessary to allude to a tunnel, and that was where the Fawnes mountain crossed the route, and this, there was reason to hope, could be passed without a tunnel. Taking the matter all in all, the author pronounced it difficult to imagine any country better adapted for colonization or improvement. At present, the country could not be said to be safe, from the predatory Arabs, but the Turks and agricultural Arabs were well disposed. The road from London to Bombay is 5,500 miles; for 2,600 miles of this distance there is already a railway, and works could be carried on cheaply in Asia Minor from the facility of procuring labour. The capital required he calculated at twenty-two millions.

Mr. RICHARD CULL read a list of ethnological queries proposed by the British Association to the Society two years ago, at the Edinburgh Meeting, and distributed copies of the queries, for the use of travellers and others in studying the varieties of man.

'Climatological Notes on Pisa and Lucca,' by Dr. J. GASON, of Dublin.

'On the proposed Expedition to ascend the Niger to its Source,' by Lieut. L. MACLEOD.—In the contract lately made by the Admiralty with Mr. McGregor Laird, for the conveyance of the mail to the west coast of Africa, there is a clause by which the contractor binds himself to supply a steam-vessel suitable for river work, for the purpose of geographical and scientific research, at the small cost of 4s. per mile. By taking advantage of this clause, Mr. Macleod proposes to open the Niger to the commerce of this country and continue researches as to the course and source or sources of that river.

'Notes on the Possessions of the Imaum of Muscat and on the Climate of Zanzibar, with Observations on the Prospects of African Discovery,' by Col. SYKES.—Col. Sykes referred to a graphic account of the condition of Zanzibar by Col. Fergusson, derived from the older testimony of a Mohammedan merchant. Nothing, he said, comparatively speaking, was known of these territories, and it was an unfortunate thing that such should be the case, particularly now that the Imaum was the friend of England, and that they could do almost all that they wished with him. Two missionaries of the London Missionary Society had resided on the coast of Africa for six or seven years, and an account of their experiences appeared in the Journal of that Society. From these, it would appear that several districts in the country referred to were, owing to their great elevation, very healthy

and that the people on the coast were Mohammedans. Col. Sykes then referred to nations tributary to the Imam of Muscat. The travels of Redmond in this district were also referred to, and a snow-capped mountain which had been discovered directly under the equator by Dr. Pratt, who pronounced the country very healthy. This mountainous region was believed to be the source of the true Nile.

Capt. ALLEN expressed his conviction to have always been that the great rivers and lakes of the west of Africa had their origin in the east of Africa; and with regard to Lake Tchad, he inclined to the belief that it had an outlet, and he was of opinion that this outlet fell into the Niger.

'Commercial Documents relating to the Eastern Horn of Africa,' translated and communicated by Dr. Shaw, was read by Col. SYKES.

THURSDAY.

SECTION F.—STATISTICS.

President.—THE ARCHBISHOP OF DUBLIN.

Secretary.—Prof. HANCOCK, J. MACADAM, JR., Prof. INGRAM, Vice-Presidents.—Lord DUFFERIN, J. HAYWOOD, Major T. A. LAMB, J. R. E. M. LONGFIELD, EARL OF MAYO, Lieut.-Col. SYKES, V. WHITEL.

Committee.—R. ATKINSON, W. J. C. ALLEN, E. BARRINGTON, B. BARRINGTON, W. BOTTOMLEY, Rev. J. BYRNE, E. CHESHIRE, C. W. DILKE, Rev. J. EDGAR, D. D., Prof. FOWLER (Massachusetts), J. W. GILBERT, J. GIBSON, J. HANCOCK, W. HOOPER, J. HUSSELL, T. HUTTON, J. HERMAN, Prof. INGRAM, T. E. C. LESLIE, J. W. MURLAND, W. WYKE, A. G. MALCOLM, Prof. MOFFETT, Prof. MORE, W. NEILD, J. PERRY, W. WILLS.

'On the Census and Condition of the Island of Bombay,' by Lieut.-Col. SYKES.—The author observed that in May, 1849, the Government succeeded in obtaining a census, as to population and as to the distinctive castes into which the population was divided. The entire population of the island, which is only seven miles in length, and not more than twenty miles in circumference, was 569,119, in 1849. Of the number, upwards of 334,000 were males, and 212,059 females. The Hindus comprise somewhere about one-half of the population. The Mussulmans are more numerous than the Parsees, the descendants of the ancient fire-worshippers; who, even in the present day, observe the old form of worshipping the sun, and the old ceremony of exposing their dead as food to fowls of the air. They construct towers, on the top of which the dead bodies are placed. The Parsees have newspapers, printed in the Guzerati language; and on one occasion they published a life of Mohammed, with an engraving or likeness of him. The Mussulmans, regarding this as a caricature of their prophet, rose against the Parsees, and threatened to exterminate them. The feud was only put a stop to by the intervention of the military. The native Christians or Europeans are about 22,000; and these, with the other natives and the castes who emigrated to the island, are all subject to the same social and political influences and laws. In the Bombay tables there is nothing to indicate the extent of vagrancy, or the number of houses. One feature is presented in the tables—the excess of males over females. There are 334,090 males to 212,059 females. The contrary is the case in Europe, where the females are much in excess of the males. There was one reason why there is such a disparity between the sexes in Bombay, and in India generally. The crime of female infanticide is general there. It is considered a disgrace if females do not get married; and to escape the disgrace of female children not being married, or to save the expenses, which are enormous in India in the marriage customs, the female children are murdered to a horrible extent. So great had the evil become, that the Government established a marriage fund, out of which they apportioned money to females to meet the marriage expenses, and that course, which might seem strange to people in these countries, had had the effect of checking, to a considerable extent, the crime of female infanticide. The only place in India where the females are to be found in numbers somewhat equal to the men is among the military, where they are allowed to any extent, though in Europe they are limited to 6 per cent. Among the Hindus the females number 50 per cent.; among the Mussulmans, 60 per cent.; and among the Parsees, 88 per cent. In India, classes were now more generally intermixing with each other. It was the general practice to bring up boys in the business of their fathers, and families married and intermarried amongst each other. In Bombay this prejudice is fast disappearing, and sons are now put to whatever trade is thought best, and marriages

take place without regard to family connexion. The youth of both sexes in the Parsee population are as 23·4 per cent. of the population; Mussulmans, 17·7 per cent.; and Hindus, only 10·8 per cent. Bombay had always been considered the grave of Europeans—the Sierra Leone of India—owing to the high tides which rise, and divided the island into six or seven parts, the water forming a continuing morass till the next high tide, leaving pestilential miasmata; fortunately, however, means have been taken to prevent the influx of the tides, and the best results have followed, in a sanitary point of view. In Great Britain the mortality is as one in forty-seven; and it is represented in the tables to be now only one in twenty in Bombay, though the view is thought to be too favourable.

'On the Productive Industry of Paris,' by the late Mr. G. R. PORTER.—After a review of the various inquiries which had been from time to time instituted with a view to ascertain the extent of production and employment within the city of Paris, the writer proceeded to the detail of the most important points ascertained by its Chamber of Commerce in an elaborate investigation into the effects of the Revolution of 1848 on the trade of the French capital. The total number of workmen employed in 1847 was 342,530, which fell, in 1848, to 156,125, being a diminution of 54 per cent. The chief falling off was in furnishing, where the reduction was 73 per cent., and the least was in the preparation of food, which only fell off 19 per cent. The latest value of the productions of Parisian labour in 1847, was 58,545,134*l.* and in 1848 only 27,100,964*l.* Although the falling off of employment in the preparation of food was not great, that in consumption was very remarkable. The quantity of flesh-meat consumed in Paris in 1847 was 150*lb.* per head; in 1848, it fell to 87*lb.* per head. After affairs settled down again, it rose in 1849 to 146*lb.* per head, and in 1850 reached 158*lb.* per head. The difference between 1847 and 1850 is partially to be attributed to the increase of population. The statistics on the degree of instruction found among the workmen is very interesting. Out of the entire number of workmen, 147,311, or 87 per cent., could read and write.—Out of 86,617 women, 68,219, or 79 per cent., were able to read and write. The rate of weekly wages was given on an average as follows:—Tailors, 20*s.* 2*d.*; butchers, 19*s.* 7*d.*; jewellers, 31*s.* 9*d.*; bakers, 19*s.* 7*d.*; shoemakers, 16*s.* 6*d.*; carpenters, 27*s.* 4*d.*; cabinet-makers, 20*s.* 3*d.*; masons, 18*s.* 9*d.*; confectioners, 21*s.* 9*d.*; milliners, 20*s.* 3*d.*; laundresses, 12*s.* 3*d.* It was found that 950 women earned less than 6*d.* per diem; 27,452 males and 100,050 females earned 2*s.* to 2*s.* 5*d.*; 157,216 men and 626 women earned 2*s.* 5*d.* to 4*s.*; and 10,393 more than 4*s.*

'Are there any Impediments to the Competition of Free Labour with Slave Labour in the West Indies?' by Prof. HANCOCK.—The principal conclusions to which Prof. Hancock came were—1. That, as a conclusion of moral philosophy, it was shameful to maintain slavery for a single hour. 2. That, as a conclusion of political economy, emancipation should be immediate, and not gradual. This position Prof. Hancock proved by the history of the emancipation in the West Indies, where the apprenticeship system turned out a failure; and remarked that, where emancipation cannot be immediate, it is the duty of those who see that the change is inevitable to make such previous arrangements that the development of free labour may arise as soon as possible. 3. That auxiliary measures, such as education, reform in the courts of law, especially respecting the tenure and sale of land, are essential in order that the blessings of emancipation may be exhibited on the community at large. Prof. Hancock showed that these auxiliary precautions had not been taken. Grants had sometimes been made in favour of education, but as soon as any pressure came they were withdrawn. He also dwelt on the importance of permanently fixing the law of property in land. 4. That the loss of property consequent on emancipation should not be thrown on the slaveholders, but on the community at large, inasmuch as the whole British people had been responsible for slavery. Accordingly, the slave-owners were compensated, partly in money, and partly in differential duties, which had not yet quite ceased. 5. That free labour requires no protection to enable it to compete with

slave labour. In slavery there was not the same division of labour as in freedom. Again, the invention of machines proceeded from free labour, freemen desiring to economize labour. The consequence was, that more labour was wasted in slavery than in freedom to produce equal results. If free labour could not compete successfully with slave labour, he feared that the moral question would be in great danger. 6. That the allegations about the negroes in the West Indies demanding too high wages are untrue, and the imputations on their character unfounded. It turned out when inquiries were made into the facts, that wages were very low; and Prof. Hancock quoted authorities to show, that wages were at such rates as 6*d.*, 4*d.*, and 3*d.* per day,—so that if the negroes had not provision grounds, they would often be in great straits. 7. That the state of the West Indies did not show the impracticability of free labour competing with slavery, but shows, on the contrary, the folly of the laws which have been passed by the Colonial Legislatures, the folly of the short-sighted selfishness of the planters, and the folly of those philanthropists who, instead of seeking the removal of those laws, demand a monopoly for the planters. In arguing this head at length, Prof. Hancock touched upon the following points:—the bankrupt state of the West India proprietors before the emancipation,—the evils of the Coolie immigration,—the unjust taxes on the labouring classes in the West Indies,—the unfair restrictions on their progress,—the system of oppressive laws by which a labourer is condemned where a proprietor escapes,—and the unsatisfactory tenure of land in the matter of summary ejection and want of leases, and in the impediments to the transfer of landed property.

The ARCHBISHOP OF DUBLIN referred to a plan of emancipation proposed, about twenty years since, by the present Bishop of Norwich. It was to this effect,—that an *ad valorem* tax should be put upon slaves, the owners fixing their value, and being obliged to part with them at that value, if the Government wished to purchase. This, it was supposed, would induce the owners to prepare them for freedom, and promote emancipation.—Prof. FOWLER, of Massachusetts, said, he would be glad to know what is really the value of West India property now, as compared with its value before emancipation; for he had heard proprietors state that it had greatly fallen. It had been stated that slavery had originated in avarice, and it had been thought probable that avarice would lead to its abolition, inasmuch as it would be more profitable to use free than slave labour. He thanked God that there was no slavery either in Massachusetts or in his native State, Connecticut. In both of them slavery had been found unprofitable. He then referred to the case of Fairfax County, Virginia, where under slavery property had greatly fallen in value. Recourse had then been had to free white labour, and the consequence was, that it was found profitable with it to cultivate property which had been before unprofitable. In this way, self-interest might perhaps lead to the extinction of slavery, though he doubted whether white labour might be available in the West Indies and some districts of America.—Prof. HANCOCK replied to several of the objections raised. In reference to the argument, that free labour could not compete with that of slaves, he referred to the fact, that the free producers of sugar were beating the slave sugar out of the market in the United Kingdom. In proof of this, he referred to the last returns of the Board of Trade, which showed that the importation of free sugar was increasing, and that of other sugar falling off. Thus, from British possessions, in the west, in the last year, we took for home consumption 1,618,000 cwt., against 950,000 the previous year. There was also an increase from the Mauritius; and from our East Indian possessions an advance from about 550,000 cwt. in 1851, to 780,000 in 1852,—whilst, during the same time, the consumption of slave sugar had fallen off from 555,000 cwt. to 317,000.

FRIDAY.

'On the Laws of the Currency in Ireland, as exemplified in the Changes that have taken place in the amount of the Annual Circulation of Bank Notes in Ireland since the passing of the Act of 1845,' by J. W. GILBERT.—In 1845, the average amount of notes that had been in circulation during

the year ending the 1st of May 1845—6,354,494.—was made the fixed or authorized issue. For any amount beyond its authorized issue each bank was required to hold an equal sum in gold or silver coin, the silver not to exceed one-fourth of the gold coin. The Act came into operation on the 6th of December 1845; and from that period each bank has made returns, stating the average amount of notes in circulation during the preceding four weeks, distinguishing the notes under 5*l.* from those of 5*l.* and upwards, and stating the amounts of gold and silver coin it held in its vaults. These returns were made by all the banks of circulation in Ireland. The proportion per cent. these averages bear to the certified circulation of 6,354,494, is also stated hereunder.—

	Average Circulation.	Proportion to Certified Circulation.
1846	7,259,949	114.25
1847	6,068,831	94.35
1848	4,928,849	76
1849	4,310,293	67.83
1850	4,512,442	71
1851	4,462,908	70.25

From this, it appeared that, if the authorized issue be represented by the number 100, the actual circulation for the six years, 1846 to 1851 inclusive, will be represented by the numbers 114, 94, 76, 67, 71, 70. The question occurs.—What is the cause of this falling off in the annual circulation since the passing of the Act of 1845? The amount of notes in circulation does not correspond with the amount of gold in the Bank of England; for the gold in the Bank of England is, at the present time, much higher than it was on the 1st of May 1845, although the Irish notes in circulation are much less. There were three negative laws of the currency in Ireland,—namely, that the amount of notes in circulation is not regulated by the Act of Parliament, nor by the wishes of the Irish bankers, nor by the stock of gold in the Bank of England. Notes are issued in Ireland chiefly for the purpose of purchasing agricultural produce; it would seem to follow that the amount of notes put into circulation will be regulated mainly by the quantity of that produce, and by the price at which it is purchased. If, then, we found that, in the years since 1845 the quantity of agricultural produce has been less, or the price at which it has been sold has been less, and especially if both these circumstances should have occurred, then have we an adequate cause for a reduction in the amount of bank notes in circulation. The annual productiveness of the harvest would affect the amount of notes in circulation. Again, a bad harvest in one year may, by the distress it produces, cause a less production of commodities in several following years, and hence there may be a less demand for bank notes. A bad harvest produces distress among the farmers, and this distress affects the amount of the circulation in two ways:—First, the farmer consumes his own produce instead of selling it, and thus does not require the use of notes. Secondly, the distress of the farmer diminishes the instruments of reproduction. If he has no potatoes, he can rear no pigs. An abundant crop of potatoes produces in the following year an abundant crop of pigs. After the failure of the potato in 1846 the exportation of swine was reduced from 480,827 in 1846, to 106,407. The potato crop again failed in 1848. The number of swine exported in 1848 was 110,787; in 1849 it was only 68,953. The destruction of the pigs which took place in 1846 would doubtless affect the circulation of notes in subsequent years, especially in 1847, 1848, and 1849, and probably, also, to a certain extent, in the years 1850 and 1851. He next proceeded to lay down as propositions, that a reduction in the quantity of commodities produced may be caused by a reduction in the number of producers, and this would occasion a less demand for bank notes; and that the amount of notes that circulate in a country will also be affected by the quantity of commodities exported, and the quantity imported. After addressing himself to these points, he said that we found that the reduction in the amount of notes in circulation in Ireland had been preceded or accompanied by a reduction in the amount of commodities produced, occasioned by a reduced productiveness in the land actually cultivated, a destruction in the instruments of reproduction by the distress thus occasioned, a reduction in the number of producers by deaths and emigration,

and the exportation of an increased portion of its capital in exchange for food. But there was another circumstance that occurred in powerfully producing the same effect, that is, the price at which the commodities brought to market were sold. He went into a variety of calculations to sustain the foregoing positions, and then said that, from the whole, he inferred that the difference between the amount of bank notes circulating in a country at two different periods cannot be regarded as any correct test of the condition of its inhabitants at those periods, unless we take into account all the circumstances by which that difference is attended,—that the decline of the circulation of bank notes in Ireland, from the year 1845 to 1851, is no accurate measure of the distress that has existed in the country, or that now exists, as other causes besides distress have concurred in producing that effect,—that in comparing the circulation of 1845 and 1851 we are making a comparison unfavourable to the country, as the year 1845 was a year remarkable for the high amount of its circulation,—and that we should indulge in no desponding inferences as to the condition of the country, even if the circulation should never recover its former amount. Even the permanent reduction of the circulation to its present amount would be no conclusive evidence of the distressed condition of the country; for, though distress first caused the decline of the circulation, yet, from the new circumstances which that distress introduced, the same amount of bank notes are not now necessary for conducting its operations.

‘Excessive Emigration and its Reparative Agencies in Ireland,’ by Mr. J. LOCKE.—After referring to the famine years, and the great emigration consequent thereon, he remarked upon the large remittances sent from America as another engine whereby the tide of emigration was swelled from Ireland; and from this cause and death, the Census Commissioners returned a decrease in the population of 1,659,330 in ten years. A more painful circumstance was attached to the emigration in the fact that it was, generally speaking, the able-bodied, the best, of the population who were leaving the country. He thought the reparative agencies to meet the case of Ireland were to be found—1. In the new progressive habits of the people. 2. In having well-defined measures of landlord and tenant. 3. In improving the condition of the labouring classes, including the small farmers. The first was manifested in the decrease of crime; for the second, reliance might be placed in Mr. Napier; and the new landlords of Ireland, through the operation of the Encumbered Estates Court, would, no doubt, do much to effect the last object. He referred at great length to tables constructed out of the records of the Encumbered Estates Court, to show the working of it in Ireland. Already, there had been 2,355 purchases made, 7,000,000*l.* was invested in the new purchases, and of this, encumbered proprietors derived 4,248,000*l.* To show how the Court worked, he mentioned that already conveyances had been executed to the number of 2,310 as against 2,355 sales. The greatest extent of sales was in the county of Galway,—the least in the county of Derry. The most extensive purchases were made in those places where the distress was the greatest, and the decrease of population greatest. Three-fourths of the purchases were made in Connaught; and two-thirds of the amount was invested in the same province.

Col. SYKES, as an Englishman, congratulated the Irish that they themselves purchased up six out of the seven millions sterling worth of the property.

Prof. HANCOCK instanced the case of a property, with a nominal rental of 2,000*l.* a year, which was not worth more than 900*l.* a year, to show that the number of years’ purchase, according to the old rentals, was incorrect data to rely on in fixing the *bond fide* number of years’ purchase; for, while on a fictitious rental of 2,000*l.* a year only ten years’ purchase might be estimated, yet, on a *bond fide* actual rental of 900*l.* or 1,000*l.* a year the number would be doubled. This disposed of the fallacy of supposing “tremendous sacrifices” had been made of the property in the Encumbered Estates Court. It was placing a nominal value of 1,000*l.* on a farm which was worth only 500*l.*, and calling it a tremendous sacrifice of property because it realized only a sum calculated at the value of 500*l.* a year.

‘On the Statistics of the Province of Nova Scotia,’ by D. McCULLOCH.

‘On the Neglected and Perishing Classes, and the Means of their Reformation,’ by Dr. EGAR.—The remedy was,—education, brotherly love towards the poor, and opening their hearts to the reception of the Word.

THURSDAY.

SECTION G.—MECHANICAL SCIENCE.

President—J. WALKER.
Vice-Presidents—W. FAIRBAIRN, J. GUDWIN, C. LANTOS, A. MITCHELL.
Secretaries—J. P. BATEMAN, C. H. HANCOCK, C. MANN, J. THOMSON.
Committee—G. Appold, J. Barton, J. Glynn, A. Liddell, Sir J. MacNeill, W. J. M. Rankine, C. B. Robinson, G. Smith, W. E. Ward, F. Whishaw.

‘Report on the Tensile Strength of Unwrought Iron Plates, at various Temperatures,’ by Mr. FAIRBAIRN.—Mr. Fairbairn said, the experiments were not sufficiently advanced to enable him to lay before the Section any detailed account of them, in consequence of the apparatus for conducting those experiments having, for the last six months, been pre-occupied for the Royal Society to determine the temperature of fusion or the laws of the solidification of bodies under great pressure. Under these circumstances, it was next to impossible to make much progress with the experiments on the effects of temperature, &c., on wrought iron plates. Up to the present time, they must therefore be considered preliminary; but, judging results obtained on a former occasion from experiments on bars of iron subjected to a transverse strain at varied degrees of temperature, it is more than probable that some new and interesting facts may be developed by those now in progress.

‘Report on the Mechanical Properties of Metals, as derived from repeated Meltings, exhibiting the maximum Point of Strength, and the Causes of Deterioration,’ by Mr. FAIRBAIRN.—After some preliminary observations, Mr. Fairbairn stated that having been requested by the British Association, at their last meeting, to undertake an inquiry into the mechanical properties of cast iron, as deduced from repeated meltings, and feeling desirous of ascertaining to what extent it was improved or deteriorated, arrangements were made for conducting a series of experiments, calculated satisfactorily to determine this question, and to supply such data and such information as will enable the engineer and iron-founder to ascertain with greater certainty how far those remeltings can be carried with safety; or till such time as the maximum of strength is obtained, and such other properties as appear to affect the uses of this valuable and important material. Mr. Fairbairn further stated, in connexion with this subject, that it was his intention to investigate another important process, which, to a considerable extent, affects the stability of some of our most important iron constructions—viz., the rate of cooling as it affects the adhesive properties of the material, and the more complete and effective process of crystallization. On these points it is well known that a rapid rate of cooling is invariably attended with risk; that an imperfect crystalline structure is obtained, and that irregular and unequal contractions are not only present, but they are frequently the forerunners of disruption, as well as exceedingly deceptive as regards appearances, or the dangerous consequences which invariably follow in cases of rapid cooling and unequal contraction.

‘On the Form of Iron for Malleable Iron Beams or Girders,’ by Mr. T. M. GLADSTONE.—It is, said Mr. Gladstone, on the application of wrought iron beams or girders I propose to make some remarks, by contrasting their powers and properties with those of cast iron; to show what form of iron I conceive best adapted for such use, and to state, as a manufacturer, what may be expected as the capabilities of iron-works to produce the same beyond previous efforts, so as to meet the increased requirements of the times. It is found that, by converting iron from a cast into a malleable state, the adhesion of the fibres of the metal, under tension, becomes increased from 7 to 27, and indeed much beyond that when the best quality of material is manufactured. At the same time, it is stated that the compressive strength is somewhat reduced. In this latter assumption I do not altogether concur, for a permanent feature in the experiments not being sufficiently taken into account—namely, that in experimenting with wrought

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iron, at a given extension, from pressure, it is necessary, before you obtain even a medium value of the resistance, a modicum of deflexion must take place to bring into play each of the fibres; consequently, not like as in a rigid cast beam, where the full action of compression acts at once, some allowance must be made for the change from the first position, in calculating the compressive forces. Assuming generally that the increased strength of tensile power of wrought compared with cast iron is 27 to 7, it at once reduces the sixfold area of the bottom web of the iron beam, and nearly reduces to one-half the required sectional area throughout, yet retaining an equal strength for every purpose. In many cases this increase of strength, enabling to reduce the weight, will fully compensate for the difference in price, so that up to this point the market and effective value of both may be said to be equal. The wrought iron beam, however, possesses this material advantage, and that is, it will always give good warning before the point of danger is reached, and this, mainly from its vastly increased defective power,—indeed, before its maximum is reached a great deflexion can safely take place; therefore, both for life and property its advantage is most conspicuous. With regard to the best form for carrying the greatest weights with the least metal, I have come to the conclusion, from actual experiment on a large scale, that the double T section is the best, provided the flanges are sufficient to prevent lateral action from the load. At the Belfast Iron Works the members can see iron of the section shown in bars of twenty-six feet long, and weighing nearly half a ton, so that it will be seen the mills are now constructed so as to roll iron almost any dimensions which may be required, and such bars, from the breadth of the flanges, have never before been attempted in the three kingdoms. When I had the honour, some four years ago, to read a paper at the Society of Arts on a means of constructing bridges without any centring of such proportions of iron, no ironmaker would attempt to produce such a proportion of material, while now I have accomplished it, and would have no hesitation in making them much larger if required. I have not a doubt for warehouses, mills, public buildings, and bridges, its value will now become extensively applied and appreciated. As these bars are rolled solid throughout, on comparison I have found they will bear nearly one-third more than any made beams of equal sectional area,—that is, with a beam of which the centre rib is of plate iron and the flanges of angle iron, and rivetted thereto, and so distributed as to make the double T form. This is easily accounted for, as you necessarily weaken the whole by its being requisite to introduce rivetting, while a due and equal resistance is offered from all parts by the solidly-rolled bar.

'An Account of a new Flax-dressing Machine invented by MATTHEW WHYTELL, Esq., Auckland, New Zealand.'—The distinctive feature of this machine is that it acts transversely instead of longitudinally on the fibre.

'Design for Safety Harbours,' by Mr. J. SAUNDERS.—The advantages of my design, said Mr. Saunders, are, durability, cheapness of execution (when compared with the important object it has in view), and security from damage during the progress of the work. The sea pavement, which has heretofore been the ruin of our best harbours, will be, by this design, dispensed with, substituting a strong sea-wall instead. The bell-work seaward will be constructed on a new plan, diminishing one foot in each course till it reaches low-water mark, on which the great sea-wall will commence; this wall will be supported from the interior by horizontal arches and sectional walls; the horizontal arches will be filled with concrete and small stones to high-water mark. The contractor may undertake, with a small capital, a large work, without any risk or danger, as each section can be completed before another is commenced, as particularly described on the design and model; the cost of execution will be less, and the permanency greater, than by the usual mode of construction, and the design may be adapted to any situation or scale of magnitude.

'On the Evolution of Gas in Walsend Colliery,' by Prof. PHILLIPS.—This is one of the numerous coal mines in Yorkshire which have been rendered remarkable for the frequent explosion of the inflammable and noxious gas with which they are filled,

and the loss of life which has in so many cases been the consequence. In every coal-pit there are two shafts, one of which serves to admit the pure air, whilst the foul gases are made to escape by the other. The ascent of the foul gases is frequently facilitated by creating a draft by fires placed near the bottom of one of the shafts. The coal is arranged in perpendicular layers, between which the gases exist in a highly compressed state. In order to detach these layers with the least possible danger, it is usual to cut through them endways, by which means the gases are allowed to make their escape at once from a considerable portion of the coal. A district of this colliery, covering about fifty acres, was effectually walled up, in consequence of the immense discharge of gas that was continually taking place. A pipe was led from this enclosed portion up through the mine and for forty feet above the surface, and from this pipe there has been a constant discharge of gas for the last eighteen years. This gas has been inflamed, and in the roughest and most stormy weather it has burned without intermission; and were it as rich in naphtha as ordinary carburreted hydrogen, it would illuminate the country for miles round. Two water-pressure gauges were fixed to the brick walls, one at the surface of the earth, and the other at the bottom of the mine, and the results were that, whilst the pressure in the mine was only 9-10ths of an inch on an average, that at the top of the pit was upwards of four inches. From observation in these mines, it is seen that discharges of fire-damp, governed by atmospheric pressure, take place before being indicated by the barometer, and that as an indicator that instrument cannot be relied on. A fact somewhat similar was first observed by Prof. Daniels, in his researches at the Royal Society, where the water barometer indicated the change of pressure an hour earlier than the usual mercurial standard barometers constantly used for observations.

FRIDAY.

'On the New Patent Law,' by Mr. T. WEBSTER.—He contrasted the facilities which the new law afforded in the application for patents, with the cumbrous, expensive, or duplicated processes which characterized the old system.

'On Telegraphic Communication between Great Britain and Ireland, by the Mull of Cantyre,' by Mr. J. M. RANKINE and Mr. J. THOMSON.—The advantages are as follows:—It is the shortest line across the Channel—being only thirteen miles from Tor Point to the Mull of Cantyre, while the distance from Donaghadee to Portpatrick is twenty-two miles. It is the safest line; for no vessel can anchor across it. It has the local advantage of connecting the North of Ireland directly with the ports on the Clyde.

'On Telegraphic Communications by Land and Sea,' by F. C. BAKEWELL.—Mr. Bakewell took a general review of the progress which has been made in this important medium for the transmission of intelligence, and examined the accidents which have still interrupted the perfection of the medium, with a view to suggesting remedies. Most of the facts stated by him have had their record from time to time in our columns: but we may mention, that he exhibited a contrivance for still further facilitating Mr. Morse's plan for transmitting symbols, by making dots and strokes on chemically prepared paper; and that in his Copying Telegraph—which, our readers will remember, he exhibited before this Section last year, and which has the great advantage of transmitting at once counterparts of the actual handwriting of parties, so that secrecy as well as the authenticity of the messages is secured—he has effected improvements which increase the rapidity of transmission to three hundred letters per minute.

'On Telegraphic Time Signals,' by Mr. C. V. WALKER.—The object was, to explain the arrangements that have been completed, as far as his part in them extends, for promoting the scheme of transmitting Greenwich mean time throughout the kingdom. On the 5th of August the first time-signal passed; and, on August 19th, the clock at Greenwich, which originates the signals, having been brought to time, and the adjustment elsewhere having been completed, the regular transmission of signals commenced:—in the first instance, to Dover, at noon, and at 4 P.M. Mr. Walker then described the apparatus constructed by Mr. Shepherd, and erected at the

London Terminus, by which the connexions are made. And, incidental to this, it is to be understood that in the galvanic-room at the Royal Observatory is a set of ordinary sand-acid batteries (to be replaced ultimately by graphite batteries); one battery termination is connected with the earth, by means of the gas-pipes,—and the other with a spring contained in Mr. Shepherd's electro-magnetic clock. The Greenwich London wire also terminates in the same clock:—and the connexions are such that, at the last second of the last minute of each hour, this line-wire and the battery-wire are placed in contact for an instant; and, consequently, if the circuit is completed at the other end of the wire, whether at London, Dover, Rochester, the Strand, Lothbury, or elsewhere, a signal will pass every hour; and, when the circuit is left open, no signal will pass. To accomplish this, a train of wheels is connected with the rod of Mr. Carter's large turret-clock, now erected over the South-Eastern Terminus. Sets of springs are placed near at hand to some of the wheels; the springs are all tipped with platinum, and are respectively connected with the several wires concerned in the scheme; and, according as the contacts between the several springs are varied, so is the time-signal led to its destination. Mr. Walker then explained an ingenious contrivance by which, at the completion of the circuit at Greenwich, a voltaic current of instantaneous duration passes from Greenwich to Dover, and causes one sharp deflexion of the galvanometer needle of the usual electric telegraph. The clerks at the several stations, should they overlook the general order to cease working, and to be on the watch, are reminded that the time is nearly due by finding that the telegraph circuit is broken; which happens during the two minutes that the spring is lifted by the pin off the earth wire at London. The clerks watch the signal, and make note of the error of their local clock.—The time-signals will, at set times, be allowed to pass automatically to Hastings, to Deal, and to Ramsgate, by turning them on the main line by the usual telegraph turn-plates now in use at junction stations. The signal will be transmitted to intermediate stations by hand, which can be done correctly to a fraction of a second. The clerk will watch for the signal while he holds in his hand the handle of a group, or a branch instrument; he will move his hand as he sees the signal, and a simultaneous signal will pass along the group.

'On Graphite Batteries,' by Mr. C. V. WALKER.—After referring to the unfitness of copper, and the too great cost of the superior metals for the purpose of batteries, Mr. Walker said he had early sought a substitute for both purposes, and had found one which seemed to promise all that was required in the deposit of carbon from gas, or graphite.

'On Strains in Lattice-Girders,' by Mr. J. BARTON.—Mr. Barton commenced by showing that, notwithstanding the investigations of late years into the theory and forms of wrought-iron girders for large bridges, yet, the nature, intensity, and directions of the strains in the vertical level or portion of the beam which separates the top and bottom were comparatively neglected, or conclusions drawn without correct theory; and having shown the large amount of material used in this portion of girders, and, therefore, the economic importance of the investigation, he proceeded to explain the mode in which he had arrived at accurate results as to these strains in the case of lattice-beams. Having investigated the subject in connexion with some large bridges he has lately erected on the Belfast Junction Railway, and with the design for the Boyne viaduct, the calculations for which and working out of the detail had been entrusted to him by Sir J. Macneil and the directors of the company, the results showed the high importance of a separate consideration of the effects of a passing and of a constant weight; and, by diagrams, were shown the maximum strains of compression or tension to which each bar and each portion of the top and bottom is subjected in ordinary bridges from both of the above causes. The paper went on to compare the relative values of single systems of bracing with the lattice, and to consider the true angle for economic bracing; also, how far the calculations are affected by rivetting together the bars at their intersections,—and then proceeded to the practical application, and to the details of construction, explaining some improvements introduced

by the author,—both as to the mode of construction of the compression bars, which are by him made to form lattice-beams,—and in the connexion of plates, by means of which he proposes to rivet plates which have to bear tension with but very slight loss of their sectional area. An isometrical projection of a lattice-beam was shown, carrying out the principles laid down.

MISCELLANEA

University of London.—In a recent number of your journal is a letter from "A Graduate (but not yet a Member) of the University of London," which seems to me to contain a view so erroneous of what ought to be the constitution of the proposed Convocation, that I trust you will allow me space for a word on the subject. I will not touch on the details of "A Graduate's" letter, lest by so doing my communication should extend to a greater length than you could find space for. The following is "A Graduate's" idea of the proper constitution of a University Convocation. Each Faculty belonging to the University ought to be represented in Convocation according to the number of the members of that Faculty belonging to the University. Now, what might be the result of this scheme of "proportionate representation"? Why, if at any future time the number of the Medical Graduates greatly exceeded that of the Arts and Law Graduates, a thing not at all improbable, then in any question supposed to involve the interests of Medicine, although inimical to the interests of Law or Arts, the Graduates of the Medical Faculty would carry all before them, and the result would inevitably be most injurious to the general interest of the University. Of course it is possible that either of the other Faculties might predominate, and so away for evil the destiny of the University. For the welfare of the University it would be equally unfortunate for the Faculty of Law, of Medicine, or of Arts to predominate in the proposed Convocation. The interests of all the Faculties should be equally cared for, without respect to the number of the members of the separate Faculty. In a University there is not, and there ought not to be, a "peculiar Faculty." My objects, then, in writing are, to protest against the idea of "proportionate representation" advocated by "A Graduate,"—to protest against there being in the University a "peculiar Faculty," be it Arts or any other,—and to enforce the idea that the common weal of a University is composed of Faculties, the Faculties being composed of an indefinite number of individuals, and that all the Faculties should be represented in Convocation as nearly as may be equally, irrespective of the number of their members. This question appears to me of much greater importance for the well-being of the University than the relative standing of M.D.'s and M.A.'s in our own and the sister (if the Cinderella of the sisterhood may be bold enough to call them so) Universities.

I am, &c.

ANOTHER GRADUATE (but not yet a Member) OF THE UNIVERSITY OF LONDON.

Sonnet, by the late Hartley Coleridge.—The following sonnet, said not to have been previously published, we borrow from the *Preston Chronicle*.—

TO JOSEPH TURNER, ESQ., DERWENT HILL, NEAR KESWICK.

Oh! there is joy and glory in the sky,
As if there was an holiday in Heaven;
And so there is; the eternal seven
Bright living lamps shew forth their spires on high.
But there is joy in Heaven when good men die?
There is, when captives die out of their chains;
When suffering Christians die out of their pains,
And when the stricken soul gets leave to fly,
God hath received him, and he sits beside
His long beloved, his everlasting bride;
And their sweet babes are playing at their feet;
But they and all look upward evermore,
Adoring love, and loving most adore
The Father, Son, and realising Paraclete.

TO CORRESPONDENTS.—A Constant Correspondent—N.—E. D.—An Old Contributor—W. R.—H. S. R.—received.

VOSS'S "LOUISA."—The Translator, Mr. Cochrane, whose version of this work we noticed last week [*ante*, p. 933], complains of our supposition in respect to a line of his quoted by us, with a variation of the original different from his before us.—The reading in his copy he has not given; but we have been favoured by another Correspondent with a transcript of the line as it appears in a copy later than our own. This certainly proves that the line had been changed since 1815;—but it does not, as we read it, bear the construction given in Mr. Cochrane's version.

THE OX AND THE DAIRY.—We are informed by Mr. Charles Knight, in reference to our remarks last week on this volume of his "Country House," that the work was written four years ago, by Mr. W. C. L. Martin—whose name appears on the present title-page—for his (Mr. Knight's) "Farmer's Library";—and that Mr. Martin has now abridged the work for the present cheap series.

A FRIEND is informed that we have already dealt with the subject of the British Museum Catalogues as far as seemed to us desirable,—and we see no reason at present for reopening the subject.

All Correspondents are requested to address their letters and communications "to the Editor," at the *Athenæum Office*, and not to any individual by name, whether known to be, or presumed to be, in connexion with the journal. The inconvenience and delay consequent on a personal address are very great, and have often been seriously prejudicial.

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 Subscribed Capital, £50,000, in 5,000 Shares of 10s. each.

LONDON BOARD.
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 Henry Chandler, Jan., Esq.
 Edward Wm. Cox, Esq.
 James Macaulay, Esq.
 Henry Paul, Esq.
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 Surgeon.
 R. H. M'Kend, Esq., 3, Oxford-street, St. Peter's.
 Surveyors.
 Mr. Edward Corbett.
 Mr. William Radford.
 Agents.
 Messrs. Dunn & Smith, 19, Prince-street, Manchester.
 Secretary.
 William Henry Partington, Esq.

This Society is established to apply the principle of Assurance to PROPERTY, as well as to LIFE; and its business consists of THE ASSURANCE OF DEFECTIVE AND UNMARKETABLE TITLES, rendering them absolute and perfect.
 The ASSURANCE OF COPHOLDS, LIFEHOLDS, and LEASEHOLDS; thereby making them equal to or even better than Freeholds for all purposes of sale or mortgage.
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 The ASSURANCE OF COPHOLDS, LIFE

BRITANNIA LIFE ASSURANCE COMPANY.

1, Princess Street, Bank, London.
Established Aug. 1, 1825, and authorized by Special Act of Parliament, 4 Vict. cap. 9.
Chairman—Col. ROBERT ALEXANDER, Blackheath Park.
ADVANTAGES OF THIS INSTITUTION.

Increasing Rates of Premium.

A Table especially adapted to the securing of Loans or Debts, and to all other cases where a Policy may be required for a temporary purpose only, but which may be kept up, if necessary, throughout the whole term of Life.

Half-credit Rates of Premium.

Credit given for half the amount of the First Seven Annual Premiums, the amount of the unpaid Half-Premiums being deducted from the sum assured when the Policy becomes a claim.

Sum assured payable during Life.

The amount payable at the death of the Assured, if he die before attaining the age of sixty, but to the assured himself, if he attain that age, thus combining a provision for old age with an assurance upon life.

Orphan's Endowment Branch.

Established for the purpose of affording to parents and others the means of having children educated and started in life, by insuring annuities, to commence at the parents' death, and to be paid until a child, or children, shall attain his first year; or, if a daughter, her 25th year of age.

These annuities are at any time commutable for their full value, if a ready money sum is required for a marriage portion, or on entering into business or a profession.

BRITANNIA MUTUAL LIFE ASSOCIATION.

1, Princess Street, Bank, London.
Empowered by Royal Charter and Letters Patent.

Annual Division of Profits—applied in reduction of the current year's premium.

Policy-holders entitled to participate in the Profits after payment of first or seven annual premiums according to the table of rates selected.

Premiums charged for every three months' difference of age, as is usually the case, for every whole year only.

Half-credit Policies granted on terms unusually favourable to the assured, the amount of half premiums for which credit is given, being liquidated out of the Profits.

At the Annual Meeting, held on the 27th April last, a reduction of 30 per cent. was made in the present year's premium on all Policies of five or seven years' standing.

Board of Directors sit on Wednesdays at 9 o'clock.

All of the assured in every case admitted in the Policy.

Medical attendants remunerated in all cases for their Reports.

(PROPRIETARY.) (MUTUAL.)

Extract from the Half-credit Rates of Premium.

Extract from Table with Participation in Profits, after Seven Yearly Payments.

Age.	Half Premium during First Seven Years.	Whole (Annual) Premium remainder of Life.	Age.	Annual Premium.	Half-Yearly Premium.	Quarterly Premium.
20	1 0 0	1 10 0	30	0 3 7 3	1 4 5	0 3 13 3
21	1 1 0	1 11 0	31	0 3 7 6	1 4 4	0 3 12 4
22	1 2 0	1 12 0	32	0 3 7 9	1 4 3	0 3 11 5
23	1 3 0	1 13 0	33	0 3 8 1	1 4 2	0 3 10 6
24	1 4 0	1 14 0	34	0 3 8 4	1 4 1	0 3 9 7
25	1 5 0	1 15 0	35	0 3 8 7	1 4 0	0 3 8 8
26	1 6 0	1 16 0	36	0 3 8 10	1 3 9	0 3 7 9
27	1 7 0	1 17 0	37	0 3 8 13	1 3 8	0 3 7 0
28	1 8 0	1 18 0	38	0 3 8 16	1 3 7	0 3 6 1
29	1 9 0	1 19 0	39	0 3 8 19	1 3 6	0 3 5 2
30	1 10 0	1 20 0	40	0 3 8 22	1 3 5	0 3 4 3

MR. R. FOSTER, Resident Director.

ANDREW FRANCIS, Secretary.

JOHN MORTLOCK'S CHINA AND EARTH-WARE BUSINESS IS CARRIED ON IN OXFORD-STREET only. The premises are the most extensive in London, and contain an ample assortment of every description of goods of the first manufacturers. A great variety of Dinner Services at Four Guineas each.—250, Oxford-street, near Hyde Park.

THE BEST MATTING AND MATS OF COCOA-NUT FIBRE.

The Jury of Class 28, Great Exhibition, awarded the PRIZE MEDAL to T. TRELOAR, Cocoa-Nut Fibre Manufacturer, 25, Leadenhall-street, London.

MR. MECCHI, No. 4, Leadenhall-street, London.

MR. MECCHI public attention to his display of Elegancies, and to the fact that the goods which he inspects Mr. Mecchi's display of Manufactures at the Great Exhibition, will be able to form a proper estimate of the general style and quality of his productions. He has endeavored to combine, for the study of economy, cheapness with elegance, and in fact to give to the cheapest article he manufactures a pleasing form and style. For instance, the Shilling Periwinkle and Sixpenny Toothbrushes are useful in their class as the Fifty Guinea Dressing Case. The external and internal fittings of his Premises have been much improved, so as to harmonize more completely with the progressive elegance of his stock, and have been designed and carried out under his immediate plan and direction.—ELEGANCIES FOR PRESENTATION, &c.; Ladies' and Gentlemen's Dressing Cases, from 17s. 6d. to 100s.; Penicillaries, from 10s. to 100s.; Cases, from 6s. to 7l.—Writing Desks, from 10s. to 50s.; and an infinite variety of articles in Paper Maché.—LEADING ARTICLES FOR EVERY-DAY USE: Table Cutlery of every description—Braziers, Schemers, Pliers, Hammers, Nail and Tooth Brushes—Combs—Electro-plated Forks and Spoons of every superior character and design.—Illustrated Catalogues gratis. N.B. All articles of Cutlery, &c. ground and repaired on the premises daily.

SAFETY FOR STREET DOORS.—CHUBB'S

PATENT LATCHES, with very small and neat keys, are perfectly safe from the attempts of picklocks and false keys. They are very strong, not liable to get out of order, and the price so low as to place them within the reach of all classes. Chubb's Patent Fire-proof Safes and Boxes form a complete preservation for deeds, plate, books, &c. from fire and thieves. C. Chubb & Son, 27, St. Paul's Churchyard, London; 38, Lord-street, Liverpool; 16, Mark-lane, Manchester; and every Field, &c. where Chambers.

METCALFE & CO.'S NEW PATERN

TOOTH BRUSH WITH PENETRATING HAIR BRUSHES.—The Tooth Brush has been the important advantage of searching thoroughly into the divisions of the teeth, and is famous for the harm it does not come from. An improved Clothes Brush, incapable of injury to the finest and most Penetrating Hair Brushes, with the durable unbleached Russian bristles. Flesh Brushes of improved polished and powerful friction. Velvet Brushes, which act in the most successful manner. Sympna Sponges, &c. of the best direct importations. Metcalfe & Co. are enabled to secure to their customers the luxury of a genuine Sympna Sponge. Only at METCALFE & CO.'S Sole Establishment, 130, s, Oxford-street, one door from Holles-street.

Caution.—Beware of the words "From Metcalfe's" adopted by

METCALFE'S ALKALINE TOOTH POWDER, 2s. per box.

SILVER PLATE, New and Second-hand.

T. COX SAVORY & CO.'S Pamphlet of Prices, with Outlines, may be had gratis, or will be sent post free if applied for by paid letter. The contents are the prices, value, and estimates of new and second-hand Silver Spoons and Forks; new and second-hand Tea and Coffee Services, Waiters, Silver-plated Flat Goods, and Electro Silver-plated Spoons and Forks.—T. COX SAVORY & CO., 47, Cornhill, (seven doors from Gracechurch-street), London.

WATHERSTON & BROGDEN beg to

CAUTION the Public against the ELECTRO GOLD CHAINS and POLISHED ZINC GOLD, so extensively put forth in the present day, and to call attention to the genuine Gold Chains made from their own ingots, and sold by Troy weight at its bullion, or reliable value, with the workmanship at wholesale manufacturer's prices. The Gold guarantee is purchased at the price charged, the workmanship according to the simplicity or intricacy of the pattern.

An extensive assortment of Jewellery of the first quality, all made at their Manufactory, 19, HENRIETTA-STREET, COVENT-GARDEN. Established A.D. 1788.

ELKINGTON AND CO.

PATENTEES OF THE ELECTRO PLATE. MANUFACTURING SILVERSMITHS, BRONZISTS, &c. Respectfully urge upon Purchasers to observe that each article bears their Patent Mark, "E. & CO. under a crown," as no others are warranted by them.

The fact frequently set forth of articles being plated by "Elkington's Process," affords no guarantee of the quality, as numerous manufacturers are licensed by them to use the process, but without restriction in the mode of manufacture, the metal employed, or the thickness of silver deposited thereon. These productions were honored at the late Great Exhibition with an award of the "Council Medal," and may be obtained at either Establishment,

22, REGENT-STREET, LONDON;

45, MOORGATE-STREET, LONDON.

NEW HALL-STREET, BIRMINGHAM.

Estimate, Price, and Catalogue sent by post.

Replating and Gilding as usual.

BENNETT'S MODEL WATCH is a combi-

nation of all the recent improvements for Performance, Taste, and Economy, securing to the wearer the indispensable comfort of Perfect Time. In Silver Cases, from 4 guineas; in Gold Cases, from 10 guineas; in Gilt Cases, from 6 guineas; to the Royal Observatory, Board of Ordnance, Admiralty, and the Queen—65, Cheapside.

DENT'S PATENT CHRONOMETERS,

WATCHES, AND CLOCKS.—E. J. DENT begs leave to inform the public that he has been awarded the Gold Medal of the Great Exhibition of 1851, the ONYX COUNCIL MEDAL given in Horology to the English exhibitors; also a Prize Medal for his Patent Marine's Compass; and has just received, by order of the Admiralty, a premium of 100 guineas for the excellence of his Chronometer at the Royal Observatory in 1851 and 1852.

E. J. Dent respectfully requests an inspection of his extensive stock of Watches and Clocks, and of the various Watches, elegant guineas, Gentlemen's, ten guineas; Young's Silver Watches, four guineas; strong Lever Watches for Engineers and others, six guineas each.

E. J. DENT, Watch and Clockmaker by appointment to the Queen, H.R.H. Prince Albert, and H.I.M. the Emperor of Russia, 61, Strand, 23, Cockspur-street, and 24, Royal Exchange (clock-makers' area), Large Church-Clock Manufactory, Somerset-square, Strand.

AMERICAN CLOCK WAREHOUSE, 545

and 546, NEW OXFORD-STREET, where will be found the largest assortment of those superior Time-pieces, American Clocks, ever imported into this country, made by the oldest and best celebrated Manufacturers in the United States. All our Clocks are warranted to keep correct time. The prices are for Thirty-hour Clocks, 14s., 12s., and 23s.; for Eight-day Clocks, 30s. and 32s.

Also, the CHILD'S VELOCIPED, a new American invention for the amusement and exercise of children. It combines the Pony and Carriage, and by the graceful and easy exercise promotes muscular development of the arms and chest. It is recommended by the Surgeon-General, and is applied to by all who have seen it. Together with every variety of American Goods.

Sold Wholesale and Retail by the Manufacturers and Importers, ROGERS & CO. 545 and 546, New Oxford-street.

HOUSE FURNISHING AND INTERIOR

DECORATIVE ESTABLISHMENT, 431, OXFORD-STREET, LONDON.—Cabinet Furniture of every description at marked prices—Brussels Carpet, 2s. 6d. per yard—Damask Curains, 10s. 6d. per pair—French and English Bedsteads, 10s. 6d. (French fabric), nearly two yards wide, at 8s. per yard—The Best Floor Cloths that can be made, cut to any dimensions, 2s. 6d. per yard. The largest Manufactory in London for Paper Hangings, English and French Decorations, adapted either to the Cottage or the Mansion, fitted up, showing the side of a room furnished.—E. T. ARCHER, 431, Oxford-street.

AT TOSSWILL & CO.'S CIGAR WARE-

HOUSES.—THE LARGEST STOCK IN THE KINGDOM OF FIRST-CLASS CIGARS.—Genuine Foreign Cigars, Silvas, Regalia, Pelons, and all other brands. 1s. 6d., 2s., 2s. 6d., and 3s. 6d. per lb.; also Tosswill's Unions and La Primera Cigars, equal to Foreign, 12s. 6d. per lb.; Bremen Cigars, 10s.; Cuba and Havana, 10s.; and all other brands, 10s. 6d. per lb.; also Mexican Cigars, 6s. and 7s. 6d. per lb. Choice Tobaccos, Turkey, 5s. 6d., and Latakia 7s. 6d. Messrs. TOSSWILL & CO., Merchants, Importers and Manufacturers, Nos. 6, 7, and 8, Pudding-lane, Eastcheap, near the Monument. Long been celebrated for the hair.

CHEAPEST STATIONERY IN LONDON.

SELF-SEALING ENVELOPES, 6d. per 100; Cream-colored Note Paper, 8 quires for 6d.; Large size ditto, 4 quires for 1s. Plain Envelopes to match, 3d. per 100. Best Sealing Wax, 14 sticks for 1s. Card Paper engraved for 2s. 6d.; 100 best Cards printed for 2s. 6d. A choice Collection of Drawing Cases, Writing and Travelling cases, 10s. 6d. per dozen. Writing Sticks, Blotting Books, Inkstands, Cutlery, &c., at WILLIAM LOCKWOOD'S, 73, New Bond-street, near Oxford-street. Remittances for 3s. sent carriage free.

GUTTA PERCHA TUBING.—Many inquiries

having been made as to the Durability of this Tubing, the Gutta Percha Company have pleasure in drawing attention to the following letter, received

"From Mr. C. Hacker, Surgeon to the Duke of Bedford—

"Office of the Duke of Bedford, 10, St. James's Place, 10, 1852. In answer to your inquiries respecting the Gutta Percha Tubing for Pump Stations, I find that the water has not affected it in the least, although it will last through in two years; we have adopted it largely, both for the water supply and for the land, much easier laid, and a more perfect job.

"Yours, &c., C. HACKER."

N.B. The Company's Illustrated Circulars, containing Instructions to Plumbers for joining tubes, lining tanks, &c., will be forwarded on the receipt of three postage stamps.

GUTTA PERCHA COMPANY, PATENTEES, 18,

WHARF-Road, CITY-Road, LONDON.

LAMPS OF ALL SORTS AND PATTERNS.

The largest, as well as the choicest, Assortment in existence of CAMMERS MAGNUM and other LAMPS, CAMPHIRE, ARGAND, SOLAR, and IMPROVED PATTERNS, and all the latest improvements, and of the newest and most recherche patterns, in ornate, Bohemian, and plain glass, or paper shades, as at WILLIAM S. HUTTON'S; and they are arranged in one large room, so that the patterns, sizes, and sorts can be instantly selected.

PALMER'S CANDLES, 6d. and 6d. a pound. Palmer's Patent

Candles, all marked "Palmer."

Single or double wicks, 6d. and 6d. per pound.

Mid. size, three wicks, 7d. ditto.

Large size, four wicks, 8d. ditto.

English Patent Camphine, in sealed cans, 4s. per gallon.

CUTLERY WARRANTED.—The most varied

Assortment of TABLE CUTLERY in the world, all warranted, as at WILLIAM S. HUTTON'S, at prices that are remunerative only because of the largeness of the dealer. 25 in. ivory-handled table knives, with high shoulders, 10s. per dozen; dessert, to match, 5s.; if of balance, 1s. per dozen extra; carvers, 2s. 6d. per pair; larger size, in proportion, to 25s. per dozen; if extra fine, with silver ferrules, from 30s.; white bone table knives, 5s. per dozen; dessert, 4s.; carvers, 3s. per pair; black horn table knives, 7s. 6d. per dozen; dessert, 6s.; carvers, 5s. 6d.; black wood-handled table knives and forks, 6s. per dozen; table steel, from 1s. each. The largest Stock of plated dessert knives and forks, in cases and otherwise, and of the new plated fish carvers in existence, at large Assortment.

SCISSORS, &c. of the best quality.

WILLIAM S. HUTTON HAS TEN LARGE SHOW ROOMS all completely exclusive of the show, and sell largely to the show of GENERAL FURNISHING IRONMONGERY (including Cutlery, Nickel Silver, Plated and Japanned Wares, Iron and Brass, &c.), so that the Great Exhibition can be purchased as easily and at once make their selections.

Catalogues, with Engravings, sent (per post) free. The money returned on every article not purchased.

25, OXFORD-STREET (corner of Newman-street); Nos. 1 and 2, NEWMAN-STREET; and 4 and 5, PERRY'S PLACE.

INFANTS' NEW FEEDING BOTTLES.

From the Lancet—"We have seldom seen anything so beautiful as the nursing bottles introduced by Mr. Elam of Oxford-street." They are adapted to milk, biscuits, and all kinds of food, and are perfectly "artificial mother's" teats, and are of elastic soft nipple, very cleanly and durable, which no infant will refuse, and whether for weaning, rearing by hand, or occasional feeding, are equally successful.—HENRY ELAM, 160, Oxford-street—7s. 6d.; or sent by post, free, 5s. extra. Each is stamped with my name and address. Beware of imitations.

RIMMEL'S TOILET VINEGAR.—IMPORT-

RUANT CAUTION.—The great and legitimate success obtained by RIMMEL'S TOILET VINEGAR having induced several unprincipled shopkeepers to offer for sale, under the name of cheapness, a counterfeit article, composed of common acetic acid, flavoured with pungent essential oils, E. Rimmel thinks it his duty to call the public to their own attention, and to warn them of the danger of using such deleterious mixtures, which are highly injurious to the system. The genuine bottles of Toilet Vinegar bear E. Rimmel's signature; and the price of the smallest is 3s. 6d.; all sold under that name must be spurious. Rimmel's Vinegar is to be had of all respectable Perfumers and Chemists, and at the Manufactory, 29, Gerard-street, Soho.

A CLEAR COMPLEXION.

GODFREY'S EXTRACT OF ELDER FLOWERS, is strongly recommended for Softening, Improving, Beautifying, and Preserving the SKIN, and giving it a blooming and charming appearance, being at once a most fragrant perfume and delicate cosmetic. It will completely remove Tan, Sun-burn, Itchiness, &c., and by its balsamic and healing qualities, render the skin soft, pliable, and free from dryness, scurf, &c., clear it from every humour, pimples, or eruptions, and by continuing its use only for a short time, the skin will become as fine, soft and smooth, and the complexion perfectly clear and clear. Sold in bottles, price 3s. 6d.; with directions for using it, by all Medicine Vendors and Perfumers.

DINNEFORD'S PURE FLUID MAGNESIA.

An excellent Remedy for Acidities, Heartburn, Headache, Gout, and Indigestion; as a mild Aperient it is admirably adapted for Females and Children.—DINNEFORD & CO., Dispensing Chemists, 25, New Bond-street, (General Agents for the Improved Horse Hair Gloves and Belts).

CHOLERA.—To avert an attack of this appalling

Malady, the Faculty advise a well-selected diet, and strict attention to the state of the skin, which latter can only be preserved in the due performance of its functions by daily frictions and ablutions; the most approved frictions for promoting this salutary state of the system, are made up of Castile Soap and RENE'S HORSE-HAIR GLOVES and STRAPS (Dinneford's Patent), well known for their invigorating effects upon the animal system. Improved gloves and Straps may be obtained of all respectable Chemists and Druggists throughout the empire.

DO YOU WANT LUXURIANT HAIR,

WHISKERS, &c.?—EMILY DEAN'S CRINILINE has been many years established as the only preparation that can be relied upon for the restoration of the hair in baldness from any cause, preventing the hair falling off, strengthening weak hair, and checking greyness, and for the production of whiskers, mustaches, eyebrows, &c. in three or four weeks with certainty. It is an elegant variety of single and double postages, by Miss DEAN, 37 A, Manchester-street, Gray's Inn-road, London.—At home daily from 11 till 7. It is perfectly restored my hair, after seven years' baldness. Major Hume, of Criniline, London. Long been celebrated for the hair.

RUPTURES EFFECTUALLY CURED

WITHOUT A TRUSS.—Dr. LESLIE continues to supply the afflicted with his celebrated remedy for this alarming complaint, the great success of which for many years has rendered any further comment unnecessary. It is easy and painless in use, causing no inconvenience or confinement, and is applicable to every variety of singular and complex rupture, whether long standing, in male or female of any age. The remedy will be sent post-free on receipt of 7s. 6d. by post-office order, payable at the General Post-office, or postage stamps, by Dr. LESLIE, 37 A, Manchester-street, Gray's Inn-road, London.—At home daily, from 10 till 1, and from 5 till 8; Sundays, 10 till 1 only.

HOLLOWAY'S PILLS FOR THE CURE OF

HEBILITY, BILE, LIVER AND STOMACH COMPLAINTS.—This inappreciable medicine is so well known throughout the world, that every part of the civilized world is daily performed by its use as so wonderful, that it now stands pre-eminent above all other remedies, more particularly for the cure of liver complaints, jaundice, dropsy, and debilitated constitutions. In these diseases the beneficial effects of this admirable remedy are so permanent that the whole system is renovated, the organs of digestion strengthened, and the respiration promoted; therefore sufferers should have recourse to it to insure a safe and certain cure.—Sold by all vendors of medicine; and at Professor Holloway's establishment, 244, Strand, London.

EAGLE INSURANCE COMPANY.

The Annual General Meeting of the Proprietors was held at Radley's Hotel, New Bridge-street, Blackfriars, to receive the Report of the Directors as to the progress of the Company during the year ending the 30th of June last, and also as to the result of the quinquennial investigation, and the bonus to be thereon declared; to elect a Director in the room of the Hon. J. C. Talbot, Q.C., deceased, and an Auditor in the room of Mr. T. G. Sambrooke, who goes out by rotation; and for other business.

Owing to the melancholy decease of Mr. Talbot, the Chairman of the Board, Mr. Peacock, the Vice-Chairman, presided.

The advertisement calling the Meeting having been read by the Secretary.

The Chairman opened the proceedings by expressing the profound regret with which he, in common with all connected with the Company, regarded the loss they had sustained in the recent decease of their late most excellent and able Chairman, the Hon. Mr. Talbot. All who knew him were aware how well qualified he was to be the Chairman of an Institution like this. His talents were well known; his firmness, decision, and judgment exceeded all that he had ever witnessed in a public man. Their loss, then, in the death of such a man, was proportionately great; and though they must bow to it with the best grace they could, they all felt that it would be long before they would be able to put such a man in the chair of the Company as the late Mr. Talbot. With respect to the business of the present Meeting, the Directors were anxious that the Proprietors should have as satisfactory a report on the state and prospects of the Company presented to them as possible; and all he had to say before you the result of this inquiry, satisfactory: at all events, if they did not, they thought to find it satisfactory, for it was founded on fact; there was no cooking in it; their excellent friend, the Actuary, had been indefatigable for months past in endeavouring to get the result of every item, account, and figure appertaining to the Company, and he would bring the result of his labours before them. He would show them that their establishment was the best of its kind, and that more assistance from their friends, they would be able to make more head than they had yet done. Looking over the list of Proprietors, it was really astonishing to find that so many of the helping hands, and insurances, or had insured themselves. He trusted this matter would be looked to in future. Mr. Jellicoe would now read the Report, and any further explanation that might be required would be readily given; but he thought they would all agree that the Report was a very satisfactory one.

The Actuary then read the Report, which was as follows:—

REPORT.

"The first quinquennial investigation of the liabilities of the Company since its junction with the Protector, in 1847, is an event which the Directors, and no doubt yourselves, regard with much interest. It will now for the first time be seen to what extent that arrangement has been advantageous, and how far the favourable anticipations which were entertained when it was originally entered into have been actually realised. Before they proceed, however, to lay before you the result of this inquiry, it will be proper to advert briefly to the transactions of the financial year just concluded, and with this view they beg your attention to the following Report, received from your Auditors:—

"The Auditors' Report was here read, from which it appeared, that the income of the year from new premiums was 5,947. 4s. 6d.; from renewal premiums, 90,675. 4s. 6d.; and from interest, 11,438. 19s. 7d. Claims were 90,177. 9s. 4d. the amount allowed for surrender of assurance, 4,769. 4s. 6d.; the expenses, 5,639. 19s. 5d.; and the total assets, 738,884. 17s. 11d.

"This statement differs in nothing very materially from those which have been submitted to you during the last two or three years, save as regards the amount of claims on decease of lives assured. This the Directors are happy to say is less, as compared with that of the previous year, by the sum of 33,035. 19s. 7d. On the other hand, the premiums on new assurances are greater by upwards of 600.; the amounts in the two years being, respectively, 5,280. 13s. 4d. and 5,947. 4s. 6d.

"As the transactions of the year will be necessarily included in the review to be taken of the quinquennial interval just terminated, your Directors will direct your attention to the Report, but proceeding at once to the more important business of the meeting, will now request your attention to the following Report received from your Actuary:—

"ACTUARY'S REPORT.

"To the Directors of the Eagle Insurance Company.
Gentlemen,—In conformity with the regulation adopted at the annual general meeting in 1847, by which it was ordered that thenceforth the surplus should be determined and divided quinquennially instead of septennially, as theretofore, an investigation was commenced early in the present year as to the condition of the various assets of the Company, and the nature of the very numerous assurance contracts which it has entered into, so as to determine, as soon after the 30th June as possible, the liabilities existing under them, and the precise position of the Company's affairs as at that date. This portion of the work is now completed, and I have the honour to submit the following as the result of it.

It appears that the assurances in force in the Eagle Company on the 30th June, 1847, were 3,654, assuring... £1,527,000
And paying premiums of 35,768, whilst those added by the junction with the Protector and another small Assurance Company, constituted 1,315, assuring... £1,005,400
And paying premiums of 34,773. The number effected since 1,250, assuring... £806,536
And paying premiums of 29,601. These together make a total of 5,298, assuring... £3,339,475
And paying premiums of 129,773. Deducting the number lapsed during the five years by decease of the lives assured, and other causes, there remained in force on the 30th June last 3,914, assuring... £2,725,512
And paying premiums of 98,795. The number in the foregoing schedule class being as exhibited in the schedule annexed to this report.

"A careful and rigorous estimate has been made of the liability as regards the sums and previous additions guaranteed under all these contracts, and also of the value of the premiums payable in respect of them, and a similar process had been gone through with regard to the re-assurances effected with other Companies, the number and particulars of which appear in the foregoing schedule. The several items constituting the assets of the Company have also been carefully revised, and due allowances made for any changes tending to increase or diminish their value. The result of all these operations will be seen in the following statement, which

exhibits the total value of the Company's assets and liabilities, as they existed on the 30th June last:—

ASSETS.

Crs.	£	s.	d.
Assets of the Company as shown by the Auditors	738,884	17	11
Report	1,003,938	0	0
Present value of 5,298, assuring in premiums	30,585	16	6
Present value of 76,718, re-assured with other Companies	30,585	16	6
Total	£1,782,408	13	11

LIABILITIES.

Crs.	£	s.	d.
Interest due to Proprietors	4,714	3	5
Claims and additions unpaid	36,938	12	2
Annuitants, &c. due, but unpaid	988	10	0
Present value of 5,298, assuring at 4d. per annum payable by the Company	1,339,515	5	0
Proprietors' fund	34,044	10	0
Surplus fund	212,729	9	0
Total	£1,782,408	13	11

"From the foregoing statement it will be seen, that after making allowance for every ascertained claim, and for every possible liability and contingency, there remains a gross surplus of 512,708. 4s. 6d. of this sum I would beg to recommend that 60,074. be appropriated to the purposes of the present division, the remaining 452,634. 6d. being left, with its accumulations, to go in aid of the fund for future additions or reductions of premiums, &c.

"The allotment of this portion of the surplus will entitle the Proprietors to a bonus of 10 per cent. on 10s. per share, meeting with the dividend now falling due on 10s. per cent. or fifteen shillings per share.

"The policy-holders, on the other hand, will get in present value, the sum of 35,836. 19s. 7d. about equivalent to a reversionary addition of 120,000. to the sums assured. The share of each of the assured in this aggregate addition will be ascertained with the utmost despatch. But since it will require upwards of 28,000. direct calculations to determine it, and its value under the proposed forms, some considerable time must necessarily elapse before the whole can be completed. The average addition will, however, be not far from 39 per cent. on the premiums paid since the division in 1847.

"It may, perhaps, gratify curiosity, to mention that the annual average of the principal items of account during the five years has been as follows:—

	£	s.	d.	£	s.	d.
New Premiums	5,932	0	2	50,665	1	0
Renewal利息	90,125	3	0	436,023	15	0
Interest	30,736	18	0	133,651	0	1
Claims	68,439	18	8	342,149	18	7
Surrenders	4,603	11	3	30,017	16	5
Expenses	5,671	0	0	28,835	19	5

"Also that of the assets of 738,884. 17s. 11d. reported by the Auditors.

	£	s.	d.	£	s.	d.
240,708 4s. 6d. is invested in life interests, paying per annum	13,356	17	5	0	11	0
333,739 11s. 5d. is invested in mortgages	10,233	19	5	0	4	7
512,583 18s. 5d. is invested in Government securities	6,815	19	3	0	3	4
12,007 10s. 0d. is invested in reversions	480	5	8	0	4	0
37,107 0s. 0d. at the time unproductive	0	0	0	0	0	0

"£738,884 17s. 11d. £30,889 7s. 0s. 8d. 3s. 7d. The total yielding an aggregate interest of 30,889. 7s. 0s. 8d. or 41. 3s. 7d. per cent. on the average.

"I have the honour to be, Gentlemen,
Your obedient servant,
C. JELLICOE.

"Such, Gentlemen, is the promising condition of the Company's affairs, as reported by your Auditors and Actuary, and most carefully and minutely verified by your Directors. They congratulate you upon it, as far as future success is concerned, and amply justifying the wisdom and prudence of the step which, in 1847, you were induced to take.

"Adopting then your Actuary's recommendation, with reference to the present division (the soundness and propriety of which your Directors have fully satisfied themselves of, the bonus payable to you on this occasion will, as already stated, be at the rate of fifteen per cent. or fifteen shillings per share, the current dividend included) and this you will receive free of income-tax, on and after the 4th day of October next.

"The position of the Company is distributed amongst the assured, your Directors have for some time past had under their consideration a more satisfactory mode of dividing it, and they have determined on being meted out to the assured, in the following manner, and with the facilities now so generally afforded, to allow the assured to participate, after paying five annual premiums, instead of requiring the previous payment of eight as heretofore, and to give them four options instead of two only, from which to select a mode of receiving their share of the surplus. That is to say, they propose that it shall be had either in cash, in reduction of the five annual premiums next payable, in reduction of all the premiums payable thereafter, or lastly, by way of an addition to the sum assured. Your Directors further propose that a proportionate addition shall be made for the interval between any given division and the time of the decease of the lives assured, and thus by these arrangements the policy-holders will be in precisely the same position as if a valuation were made, and the surplus distributed every year, instead of quinquennially. In other words, those who are entitled to participate will begin to do so at the end of the first five years, or just before the sixth annual premium becomes due, and will then, in effect, continue to do so every year until that in which the decease of the life assured shall occur.

"Your Directors will now conclude their Report, not doubting that you will find it in ample reason to be satisfied with the state of your affairs, and the measures and the public will appreciate the solid advantages which the great wealth and stability of the Company enable it to offer them."

The Chairman said, the question now was the reception and adoption of the Report; but if the Proprietors wished to express any opinion upon it, it was open to them to do so. The Chair-

man, after a pause, put the adoption of the Report to the meeting which was agreed to unanimously.

Mr. CUTNHER said he found the general fund amount to 738,000, but he was anxious to know, as nearly as could be, what the gross amount was in 1847.

The ACTUARY said the gross amount, as nearly as he could say, was 738,000.

Mr. CUTNHER said it must be very gratifying to every gentleman present to hear so flattering an account as that which he had that day had from their worthy Actuary. He had elicited, from Mr. Jellicoe, that five years ago their assets were only about 400,000, whereas since then they had reached 738,000—a very large amount indeed for so short a period. He should be glad if the Report could be printed and sent to all the proprietors, and immediately amongst the proprietors by the more rapid means of a newspaper press, and that the assured would also receive a copy of it.

The CHAIRMAN said that the next business was the election of a Director to fill up the vacancy caused by the lamented death of Mr. Talbot. There was only one candidate for the office, namely, Mr. T. G. Sambrooke, one of their respected Auditors, but the election must take place by ballot.

The ballot then took place, and Mr. Sambrooke was declared duly elected.

Mr. SAMBROOKE returned thanks.

Mr. ALLEN was, without opposition, elected Auditor, in the room of Mr. Sambrooke.

Mr. ROBERT THOMAS said that for the last two years it had fallen to him to convey the thanks of the meeting to the Actuary for the great attention they had paid to their interests. The pleasure he had felt in doing so was doubled on the present occasion by the admirable state of the excellent condition of the Company's affairs which they had given them. He begged, therefore, to propose a vote of thanks to all the Directors, and he hoped they might all concur in carrying on the affairs of the Company with the same success.

The motion having been duly seconded and unanimously agreed to.

The CHAIRMAN acknowledged the compliment on the part of himself and his brother directors, who, he said, were glad to possess so completely the confidence of the Proprietors, as was evidenced by the business having gone off so pleasantly that day. Every member of the Board was sincerely desirous to render himself as useful as possible to the Company; and with the assistance of the Proprietors, they hoped to be able to place its affairs in a more flourishing state than anything they had yet seen. Before they separated, he asked them to join in a vote of thanks to their excellent friend on his right hand, the Auditor, who was, indeed, the right hand of the Company; and as such, and for his exertions in promoting the interests of the Company, was entitled to their best thanks.

The ACTUARY expressed his obligations to the Chairman for the very kind manner in which mention had been made of his services. He was happy to think that the Company was faithfully and zealously served not only by the Actuary, but by all these gentlemen who were in the office of the Company under him. He might perhaps take that opportunity of alluding to a circumstance which placed the Company in a very unusual position, and in comparison with other Companies. It was well known that the "Eagle" was originally a strictly proprietary office, and that it was only by the purchase of shares that the Company could be enlarged.

The CHAIRMAN said that the Company was now in a comparatively late period. Several of the old Companies had done the same thing; but the course pursued by them had been, he believed, in every instance different from that adopted by the "Eagle." They one and all, excluded those who were assured at the time of the change from any participation in the advantages which it was to confer. The "Eagle," on the contrary, freely admitted all who were at the time insured in the office, although of an original contract with them, and who were assured at the time of the change, and nothing more. As years elapsed, these policy-holders, observing that the additions made were small in comparison with those awarded to insurances of the same date in other Companies, expressed a good deal of disappointment, forgetting that they could only participate from the date of their admission as participants upon them. He had felt great satisfaction at the course, impossible that the change could act retrospectively. He thought it necessary to mention these facts, knowing that the disappointment felt and expressed by these early members of the Society at the bonus not corresponding with their expectations had operated to the disadvantage of the Company, whose liberality in this particular was deserving of a better recompense. The position of persons assured at that early stage, and of those who were coming into the Society, was necessarily wholly different. Indeed, he believed that there was no Company in a position to offer more substantial advantages to persons effecting insurances at the time of the change, or to insure the stability, the extent of its business, its low rate of expenditure, or its truly honest and skillful management.

Mr. ROBERT ALEXANDER GRAY, a Director, proposed a vote of thanks to Mr. Sambrooke and Mr. Lynde, the Auditors. In the manner in which they had performed their duties reflected the management of the Company. He had felt great satisfaction at the appointment of Mr. Sambrooke to a seat at the Board, and he had no doubt that he would prove a valuable colleague.

Mr. GRAY then returned thanks, and expressed his regret that Mr. Lynde was absent through indisposition. The proceedings then terminated.

The Directors and Officers of the Company for the ensuing year are as follows:—

DIRECTORS.
Chairman—Walter Alexander Peacock, Esq.
Deputy-Chairman—Robert Alexander Gray, Esq.
Charles Blifford, Esq.
Thomas Beckford, Esq.
Thomas Devay, Esq.
Nathaniel Gould, Esq.
Charles T. Holcombe, Esq.

Rich. Harman Lloyd, Esq.
John Lockwood, Esq.
Ralph Charles Price, Esq.
Thos. G. Sambrooke, Esq.
William Whitlow, Esq.

Auditors—J. G. Lynde, Esq., Thomas Allen, Esq.
Physicians—Geo. Leith Russell, M.D., 7, R. 15, Whitechapel-street.
Surgeons—James Sauer, M.D., 15, Finsbury-square; William Cooke, Esq., M.D., 23, Trinity-square, Tower-hill.

Actuary and Secretary—Charles Jellicoe, Esq.